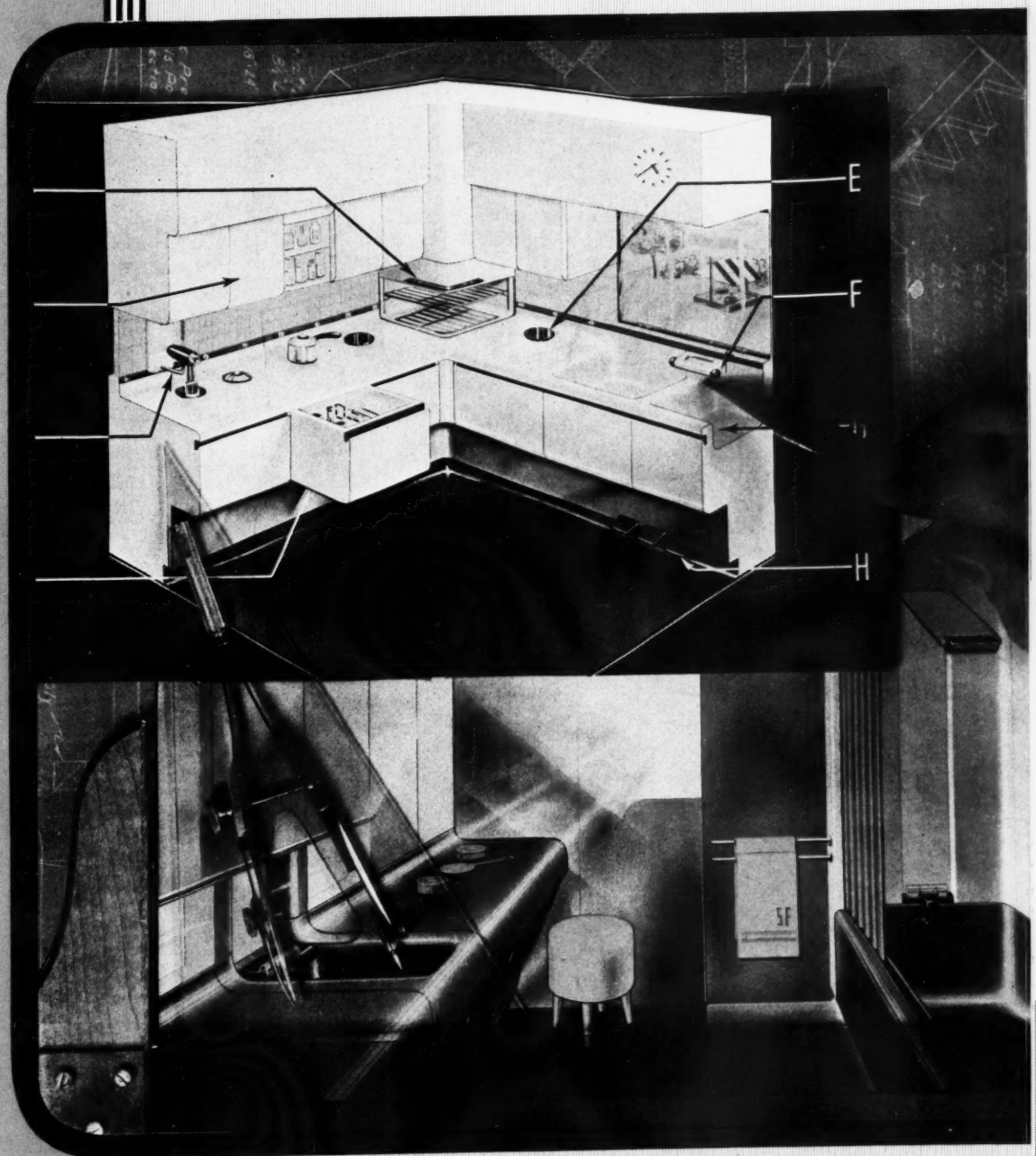
DOMESTIC ENGINEERING



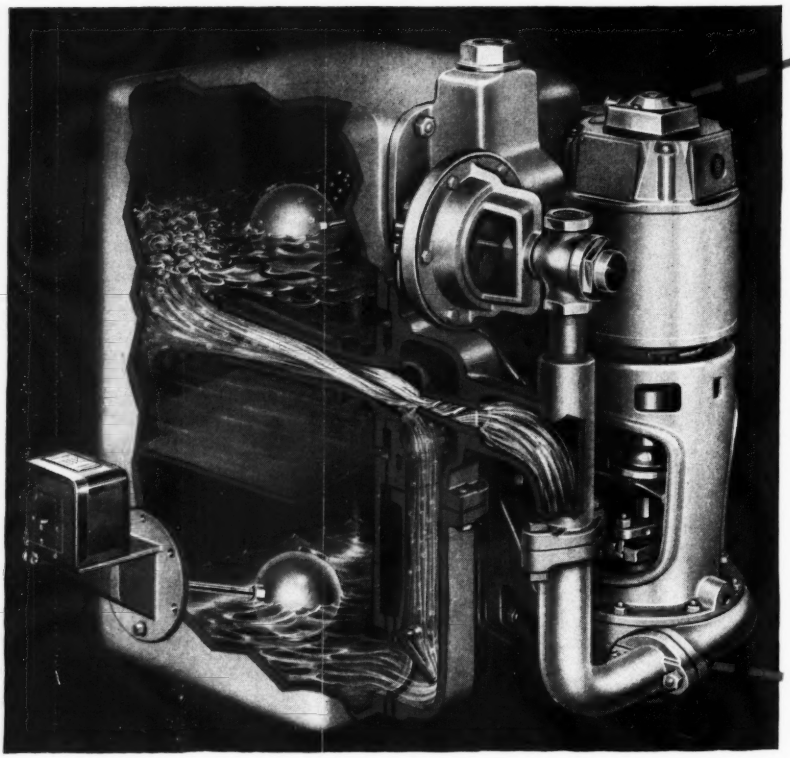
ht: Plastic
chen and
hroom of fu-
, as visual-
by foremost
gners . . .
"Spotlight
Plastics,"
44.

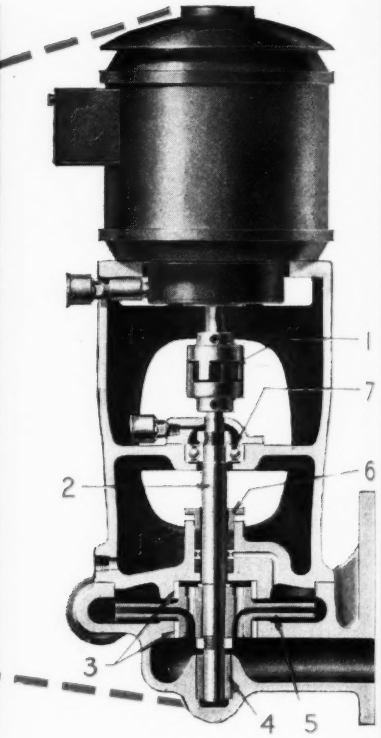
nor Roll of
ustry's Con-
ctors". . . .
Page 50.

iteen Mil-
Plumbing
Wanted"
See Page 52.

APRIL,
1943

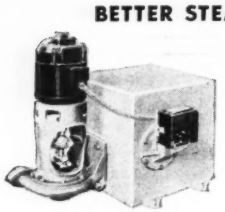
Plumbing, Heating and Air Conditioning





KEEPS STEAM LINES CLEARED FOR ACTION

BETTER STEAM PLANT OPERATION BEGINS WITH EFFICIENT CONDENSATE RETURN



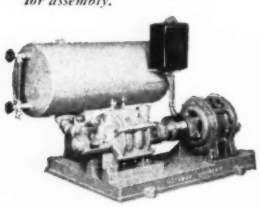
Hoffman-Economy Type "E" Condensation Pump with vertical pump and motor assembly.

You can always bank on the Hoffman-Economy "V-V" Vacuum Pump to do a job! A marvel of compact efficiency—featuring the Jet Vacuum Producer, simplest and most effective method of removing air from steam lines.

We set the motor high above the floor to protect it from dirt and water. We bored the motor support simultaneously with the bearing seats for perfect alignment. We connected pump and motor with a *flexible coupling*...so that a standard motor could be used.

The numbered points in the cut-away above tell the story of mechanical excellence. (1) Heavy duty flexible coupling (2) stainless steel shaft (3) renewable bronze wearing rings (4) oil-less renewable bearing (5) enclosed bronze impeller (6) split bronze packing gland (7) shielded deep-groove ball bearing carries pump shaft independent of motor bearings. These are a few of the reasons this pump satisfies the critical engineer.

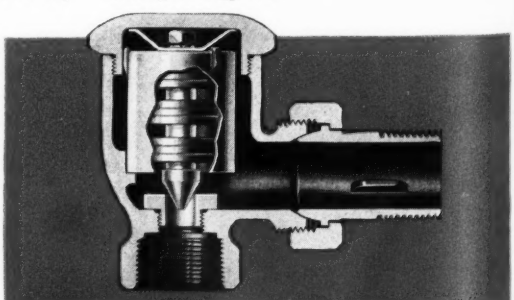
Hoffman-Economy offers all types of Vacuum and Condensation heating pumps—catalog on request.



Hoffman-Economy Type "B" Condensation Pump.

HOFFMAN TRAPS

It's plain good judgment and a patriotic duty to select steam specialties which give better service longer—*and can be repaired with little expenditure of critical material.* Hoffman Traps measure up to these standards—can be easily maintained at full efficiency for years. A complete and up-to-date line, built to meet War Production Board specifications.



Above is a Hoffman No. 9H High Pressure Trap. Body is brass and diaphragms of non-corrosive metal. Valve Seat is renewable and cage-mounted thermal unit replaceable without adjustment.

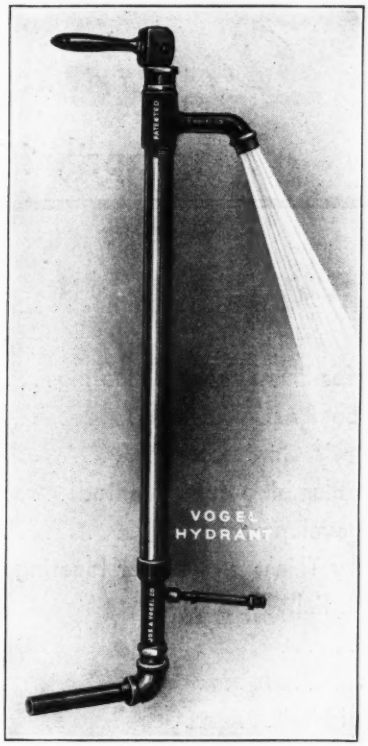
HOFFMAN

HOFFMAN SPECIALTY CO., 1001 YORK ST.,
DEPT. RX-4, INDIANAPOLIS, INDIANA

Makers of Hoffman Valves, Traps and Pumps —sold everywhere by leading wholesalers of Heating and Plumbing equipment.

Controlled Heating

STEAM HOT WATER



VOGEL FROST-PROOF HYDRANTS ARE AN EXTRA *PROTECTION* AGAINST FIRE

And in times like these every precaution must be taken.

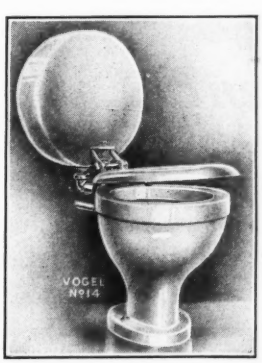
That is why **VOGEL** Frost-Proof Hydrants are being installed in war plants, aircraft factories, shipyards, chemical and high explosive plants, and wherever the assembly line must be kept moving.

These Hydrants are simple and rugged in construction and seldom require repairs or adjustments. They will never freeze no matter how cold the weather. They are particularly valuable on farms where they supply a year 'round source of running water and provide added fire protection.

VOGEL Number 4 and 14 closets are giving extra service, with fewer repairs in thousands of war plants and factories.

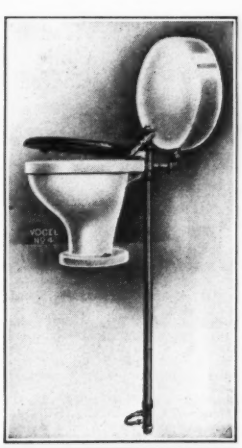
JOSEPH A. VOGEL CO., WILMINGTON, DEL.

VOGEL PATENTED PRODUCTS



Vogel Number 4. Vitreous china bowl with top supply, painted white enameled drum shaped pressure tank, reinforced hardwood seat, union ell flush connection. *This fixture can be furnished with Vacuum Breaker and Ball Check Waste.*

Vogel Number 14. Vitreous china top supply bowl, heavy brass flush valve, reinforced hardwood seat, painted white enameled drum shaped tank. Union ell flush connection.



In This Issue . . .

April, 1943

Features

Spotlight on Plastics for Plumbing and Heating 44
Water Systems and Beef and Apples 47
Honor Roll of Industry's Contractors 50
Sixteen Million Major Plumbing Jobs Wanted! 52
Washington News Developments 53
Recap—What Industry Thinks on Postwar Heating 54
Predict Postwar Potential 55
Dolan and Olson 56
Study in Substitutes 57
"No Labor Shortage Here" 59

Automatic Heat and Air Conditioning Section
(Pages 65-77)

Could You Heat This Room with These Radiators? 65
Basis for Conversion 68
Tank Heater Idea Favored 70
Oil-Heat Institute Talks Conversion and Postwar 72
The Walls Breathe 74

This Issue

Plastics take the spotlight this month! An expert on plastics from the engineering department of one of the country's large plastics fabricators does a good job of giving us ideas on the future of plastics in the plumbing, heating and air conditioning fields. You'll find this article starting on Page 44.

Another spotlighted feature which has been too long backstage is a report on the wartime contributions of representative members of our industry. Read, on Page 50, what others have been doing and then send us a report of your own works.

Water systems are still front page news to the plumbing contractors, farmers, and practically everyone who likes to eat regularly. This month we have covered the activities of a Michigan contractor who is helping his farm customers meet their quotas for livestock and fruit.

Other features—a huge housing project on the west coast, an article by Herman E. Winkler, executive vice president U. S. Machine Corp., which tells what happens inside a boiler's firebox.

Departments

Between Ourselves 38
Our Industry 43
Questions from Readers 60
News of Contractor-Dealers 78
Obituaries 84
Convention Dates 85
News of Manufacturers and Wholesalers 86
News of Women 89
News of Products 90
News of Sales Aids 92
News of Patents 100
Classified Advertising 113
Index to Advertisers 114

DOMESTIC ENGINEERING

Vol. 161; No. 4; Whole No. 2110

Published Monthly by Domestic Engineering Co., 1900 Prairie Ave., Chicago, Ill., U.S.A.
Subscriptions: $3.00 per year (after March 15); Current copies—30c each; Back copies—60c each. Entered as second class matter on September 26, 1932 at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Copyright, 1943, by Domestic Engineering Co.

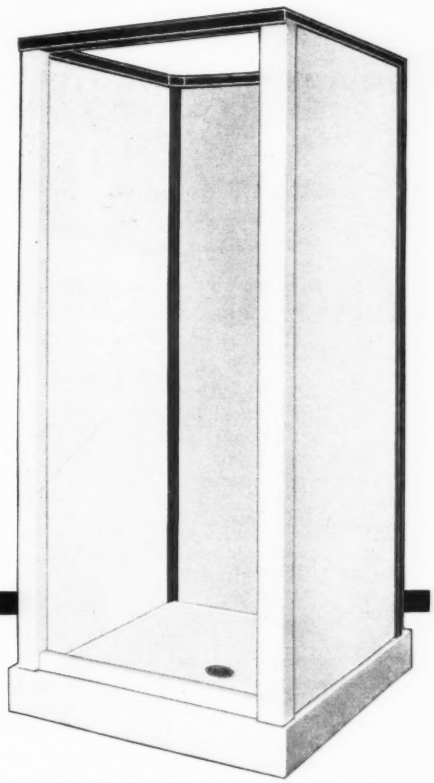
Member, Audit Bureau of Circulations and Associated Business Papers.

O. T. Carson, President — Wm. W. Gothard, General Manager
Staff: C. L. Staples, Managing Editor; R. Herlov, Merchandising Editor; H. L. Alt, Consulting Editor on Heating and Air Conditioning; T. E. Hanson, Technical Editor; J. B. McCabe, News Editor; G. R. Bornemann, Manuscript Editor; E. P. Campbell, Advertising Manager; J. A. Foxworthy, Manager, Advertisers' Service Department; M. J. Huxley, Circulation Manager; M. Styve, Readers' Service Department; B. Balster, Advertising Production.
Field Representatives: E. G. Hutchison, Douglas M. Kenney, R. V. Sawhill, A. T. Papineau, F. C. Murray, J. U. Farley.
New York City address, 110 East 42nd Street; Cleveland address, Citizens Building; Los Angeles address, 5915 Satsuma Avenue, North Hollywood, Calif.

BIG OPPORTUNITIES WITH

WEISWAY V DELUXE CABINET SHOWERS

In Remodeling and New Building which Now Rate AA3 Priorities

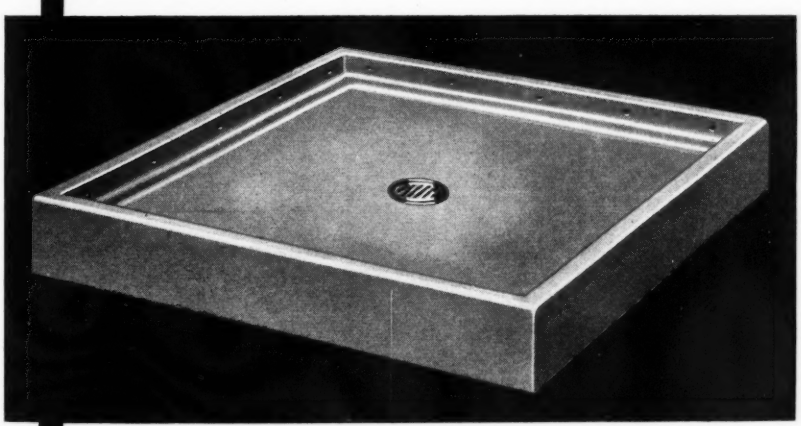


Saves Time and Labor on the Job

Accurately prefabricated, easy to handle and install, Weisway V DeLuxe provides leakproof, self-contained bath facilities for privately financed housing now rating high priorities.

Official encouragement, both federal and local, for the creation of more housing facilities in war production areas, opens more sales opportunities for you. Weisway V DeLuxe Cabinet Showers contain less than one pound of critical metals...are available through your established supply house. Quality construction and labor-saving features provide a real profit to you.

The new Plastex Receptor, processed of chemically blended materials, containing no cement, is high-pressure molded under 3 million pounds pressure into a hard, close-grained unit of even density. Ask your jobber or write now for details and prices. No obligation, of course.



NEW PLASTEX RECEPTOR

an exclusive Weisway feature, has many advantages over pre-cast concrete:

Lighter in Weight

Stronger, More Durable

Easier to Handle and Install

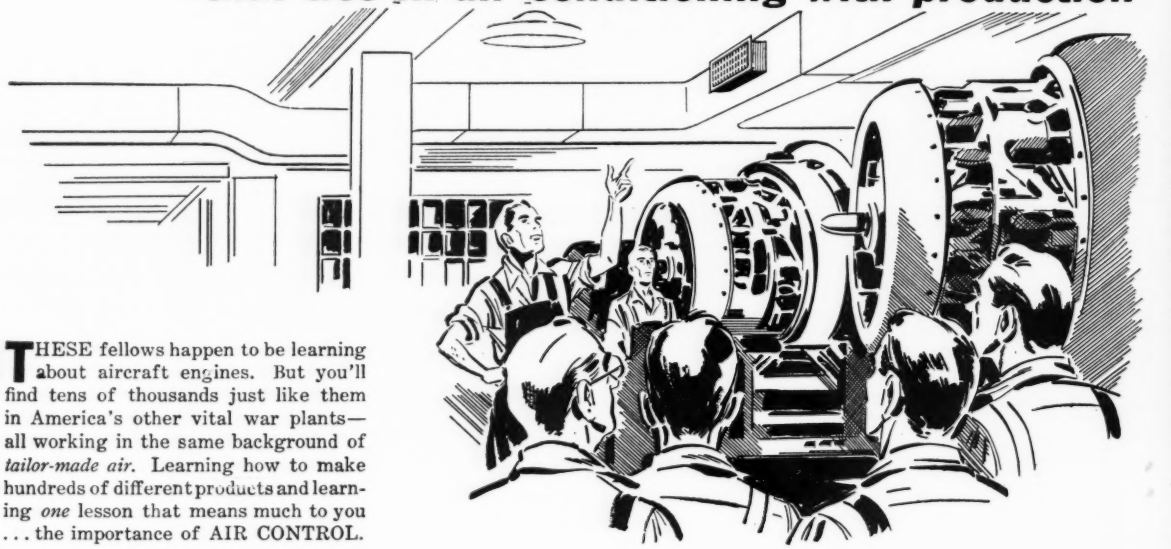
Affords Greater Comfort, Safety and Beauty

HENRY WEIS MFG. CO., INC. (Est. 1876)
404 OAK STREET, ELKHART, INDIANA

WEISWAY Cabinet Showers

NEW POST-WAR CUSTOMERS *in the making*

ENGINE ASSEMBLERS *get a lesson that ties in air conditioning with production*



THESE fellows happen to be learning about aircraft engines. But you'll find tens of thousands just like them in America's other vital war plants—all working in the same background of *tailor-made air.* Learning how to make hundreds of different products and learning *one* lesson that means much to you . . . the importance of AIR CONTROL.

And don't think this lesson will be forgotten when industry returns to civilian production. Throughout the commercial and industrial fields there will be a greater demand than ever for properly designed and installed heating, ventilating, dust and fume control and air conditioning equipment. Here is a market, ready-made for contractors, that can be readily sold on your services after Victory.

Remember, Sturtevant is ready to help you with today's problems in any way we can. Our role in war is the same as it has always been—the manufacture of air handling equipment—but today Uncle Sam must get the first call. In supplying the equipment that is giving countless people a new appreciation of "Air at Work"... we are learning many ways to make Sturtevant fans and heaters and air conditioning units better than ever before. Count on them when making your plans for Tomorrow.

B. F. STURTEVANT COMPANY
Hyde Park Boston, Mass.

Sturtevant
REG U S PAT OFF
Puts Air to Work

STURTEVANT UNIT HEATERS

Downblast Heater

Speed Heater

Multivane Heater

STURTEVANT AIR BLENDERS

STURTEVANT UNIT VENTILATORS

STURTEVANT VENTILATING FANS

Victory Axiflo

Silentvane Design 7 & 8

Multivane Design 6

terest in POST-WAR PLANNING?

Marberry, advertising manager, shows Walter F. Rockwell, president, and T. A. Craw- general sales manager, some early results of Timken's Post-War Planning Advertising. First TSA Post ad appeared on March 6.

Timken Scoops the Field!

evealing a part of Timken's post-war plans in 37 newspapers nd the Saturday Evening Post early in March resulted in this ood of evidence of public interest.

Thousands of letters—"we want more data," "send us your ooklet"—congratulatory messages, telephone calls to Timken ealers and visits to Timken showrooms resulted from this reliminary announcement.

Yes, the public is interested in post-war products! The ublic has confidence in Timken Silent Automatic!

Timken Silent Automatic has earned this position of leader- ip by building solidly in pre-war times — better products, wer upkeep costs, freedom from mechanical troubles, lower rvice costs, careful, conscientious planning with dealers, service training, sales training, full-color catalogs, mailing pieces, consistent newspaper and magazine advertising, and constant field sales and service contact.

Timken's post-war products will include improved automatic heating and air conditioning equipment, oil burning water heaters and other products for the home. All built with the same care and experience that have won and held leadership for Timken Silent Automatic.

Timken's post-war plans for dealer profits will be in tune with the times and in accordance with the steadfast Timken policy of providing substantial profits for strong, aggressive, progressive dealerships. Can you qualify? Write us today.

ARMY E NAVY
For Production "Well Done"

TIMKEN *Silent Automatic*

Division of THE TIMKEN-DETROIT AXLE COMPANY, Detroit, Michigan

An *Honorable Name* – one well worth remembering

THE *Original* CONTINUOUS-WELD PIPE

WHEN YOU BUY PIPE REMEMBER THESE

14 Points

OF FRETZ-MOON SUPERIORITY

- Uniform in quality
- Uniform in size
- Uniform in wall thickness
- Uniform weld
- Uniformly soft and ductile
- Uniformly threaded
- Uniformly easy to cut
- Uniformly easy to thread
- Uniformly easy to bend and coil
- Uniformly easy to weld
- Uniformly easy to fit
- Uniformly clean and free from scale
- Uniformly galvanized with a smooth tight coating
- Uniform lengths

★ ★ ★

Made Also in Extra Long Lengths

Plumbing, heating and air-conditioning contractors hold in high regard those products they use made by manufacturers who have kept faith with them over the years.

Fretz-Moon Pipe has never wavered from its original high standards of quality, but improvements in manufacturing processes have raised these standards.

Today Fretz-Moon is keeping faith with America's greatest effort against domination—and helping to win your war.

Someday, you will again be able to take advantage of our widespread system of distribution and of the 14 definite points of superiority of the pipe we make.
In the meantime, don't be impatient with your supply houses. They, too, face many difficulties—will appreciate your cooperation.

It's a name well worth remembering.

FRETZ-MOON TUBE CO., INC.
BUTLER, PA.
Makers of black and galvanized steel pipe—in UNIFORM LENGTHS

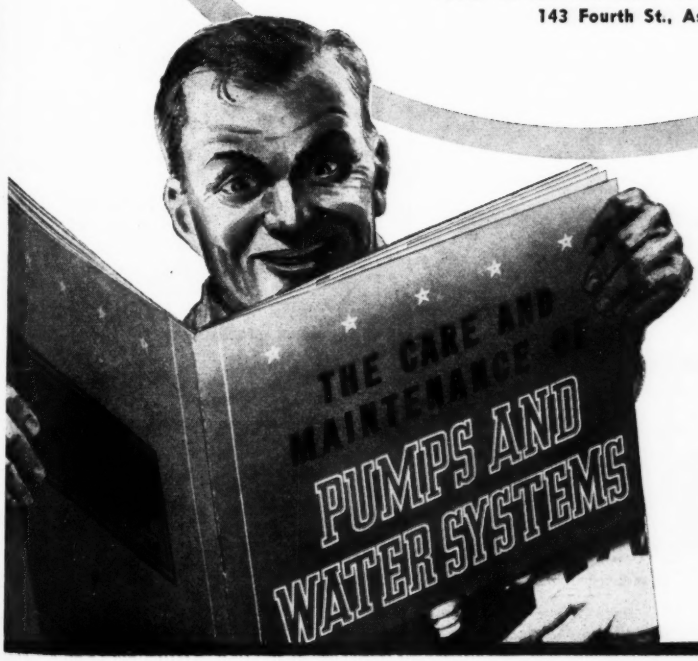
Sure! He Wants One!

MYERS *handy* REPAIR KIT

Easy to Sell!
For ALL MYERS
Plunger Type, Shallow Well, Gearless, Pumps and Water Systems

Wartime conditions have greatly increased the need for a handy repair kit like this. At a time when you are short-handed and want to save your truck, your tires and gasoline, water system owners are willing to make their own *minor* adjustments and repairs. You can encourage this attitude and help Myers owners by displaying and selling Myers Repair Kits, containing parts that are subject to the most wear. Many owners like to keep one of these repair kits on hand just for an emergency. These handy kits are easy to sell — and they're a profit item. Write for full information.

THE F. E. MYERS & BRO. COMPANY
143 Fourth St., Ashland, Ohio



Free!

Owner's MANUAL for your customers

Requests for this practical manual are pouring in from all parts of the country. Book of 28 pages, fully illustrated. Tells owners how to diagnose and remedy *minor* pump and water system troubles. Gives useful information on all types of pumps. Will stimulate your sale of repair kits and replacements. Manual, with imprint, furnished free in quantities up to 25 to any pump or water system dealer. Send for sample copy.

Take Off Your Hat To The MYERS
PUMPS · WATER SYSTEMS · SPRAYERS · HAY TOOLS · DOOR HANGERS

FIT THE VALVE TO THE SERVICE

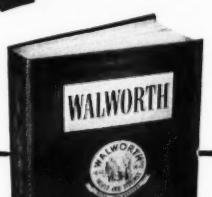
WHERE THROTTLING IS NOT REQUIRED

Walworth No. 95 Re-New-Disc Bronze Globe Valve saves time and trouble in changing discs because of the lock-on, slip-off disc holder originated by Walworth. It's an ideal globe valve for use where throttling is not required. General purpose discs are regularly furnished, and special discs are available for unusual services.

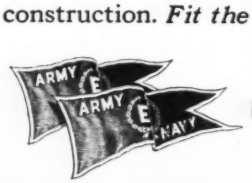
WHERE THROTTLING IS REQUIRED

Walworth No. 245P, with its hard plug type disc and seat, is designed for throttling service. It resists "wire drawing" and lasts longer. Like the No. 95, extra strength in the body-to-bonnet connection is obtained by the union bonnet design.

Walworth No. 95 and Walworth No. 245P are two excellent valves for general service. They are well designed, made to precision standards, and proved in the services for which they are recommended. They are engineered for specific purposes . . . No. 95 for general service, No. 245P for throttling service . . . and each has its distinctive features of design and construction. *Fit the valve to the service.*



To help you "fit the valve to the service," you'll find pertinent information on Walworth's *complete line* of valves, fittings, pipe, and pipe wrenches in the new Walworth Catalog 42. Included are 78 pages of practical engineering data that simplify valve selection and make piping layouts easier. Write, on business stationery, for your free copy.



BOSTON AND KEWANEE PLANTS

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 101 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Are You Having Trouble with Excess

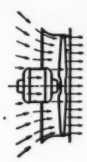
Heat, Fumes, Moisture or Dust ?

Read How PROPELLAIR Ventilating Specialists Solved a Difficult Problem for Aluminum Company of America!

PROPELLAIR VENTILATING EQUIPMENT OFFERS THESE EXCLUSIVE ADVANTAGES

AXIAL, AIRFOIL PROPELLERS, especially designed by Propellair engineers, deliver maximum air with minimum horsepower. Air flow is even over all parts of the blades—the *whole* fan works, not just the tips! These unique propellers are also non-overloading—from free air to complete block-off, horsepower remains virtually constant as long as motor speed is constant. The number of blades, and their angle and shape, depend on the job to be done.

CURVED ENTRANCE RING



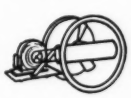
—as contrasted with ordinary straight-edge rings that serve merely as mounting devices—enables Propellair Fans to deliver considerably *more air per horsepower than other types.* Introduced in 1930, as a result of exhaustive experiments and tests by Propellair engineers, this design makes possible the utilization of the "Airfoil" air-movement principle in the *entrance ring* as well as in the *propeller.*

A PROPELLAIR FAN FOR EVERY APPLICATION!

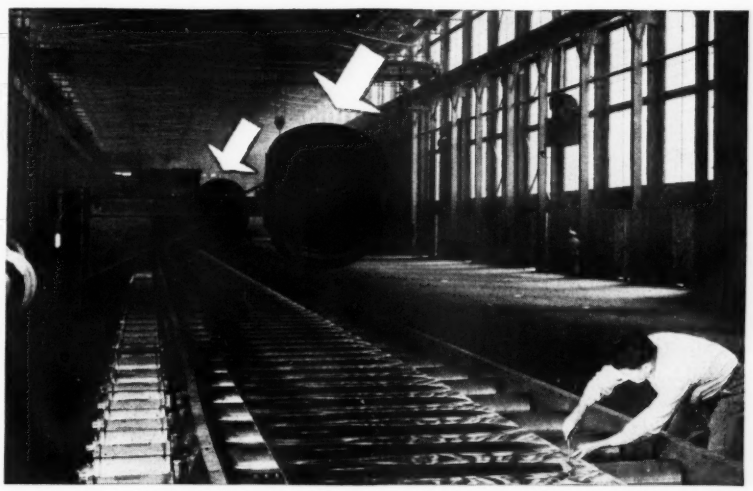
Pictured here are just three of *ten* different types of Propellair Fans. Each of the ten was developed for specific ventilating jobs—is guaranteed to perform them with utmost efficiency, dependability and economy.

CD—Direct connected to electric motors. For ducts, hoods, roof ventilators or panels.

CS—Heavy-duty complete belt-driven unit in duct section. For severe dust, corrosive or explosive vapors.



CU—Low-stand, tiltable, portable cradle fan. For hardening-room service, production-line drying or cooling.



This photo, taken by Aluminum Company of America, appeared in the Saturday Evening Post for January 2, as part of a feature article on America's war production.

Finished sheets of aluminum like this one, two city blocks long, were rolling out of Aluminum Company of America's great mills at temperatures much too hot for immediate handling. How could they be cooled—quickly and efficiently—without hampering output?

Alcoa engineers called in Propellair ventilating specialists, who recommended that 7½ h.p. Propellair Fans—delivering 22,400 cubic feet of air per minute—be installed above the moving sheets. Special drums were devised to direct *all* of the air onto the sheets, and the complete assemblies were mounted on special "jibs" to hold them in correct position. Now in constant operation, these Propellair Fans reduce the heat of the aluminum sheets 400°F. as they pass beneath!

In thousands of war plants everywhere, Propellair ventilating specialists have solved tough air-moving problems of many other types, too. Harmful, dust-laden air is removed—fumes and smoke are exhausted—cool air is circulated—heat is carried away or more evenly distributed.

Whatever *your* war-production ventilating problem, it can be solved skillfully and economically by Propellair men and equipment. Mail the coupon below for complete information!

Mail This Coupon Today!

PROPELLAIR INC.
"Moving Air Is Our Business"
SPRINGFIELD • OHIO

PROPELLAIR, INC., Springfield, Ohio 2

Please send me complete information on Propellair Ventilating Equipment.

Name..... *Position*.....

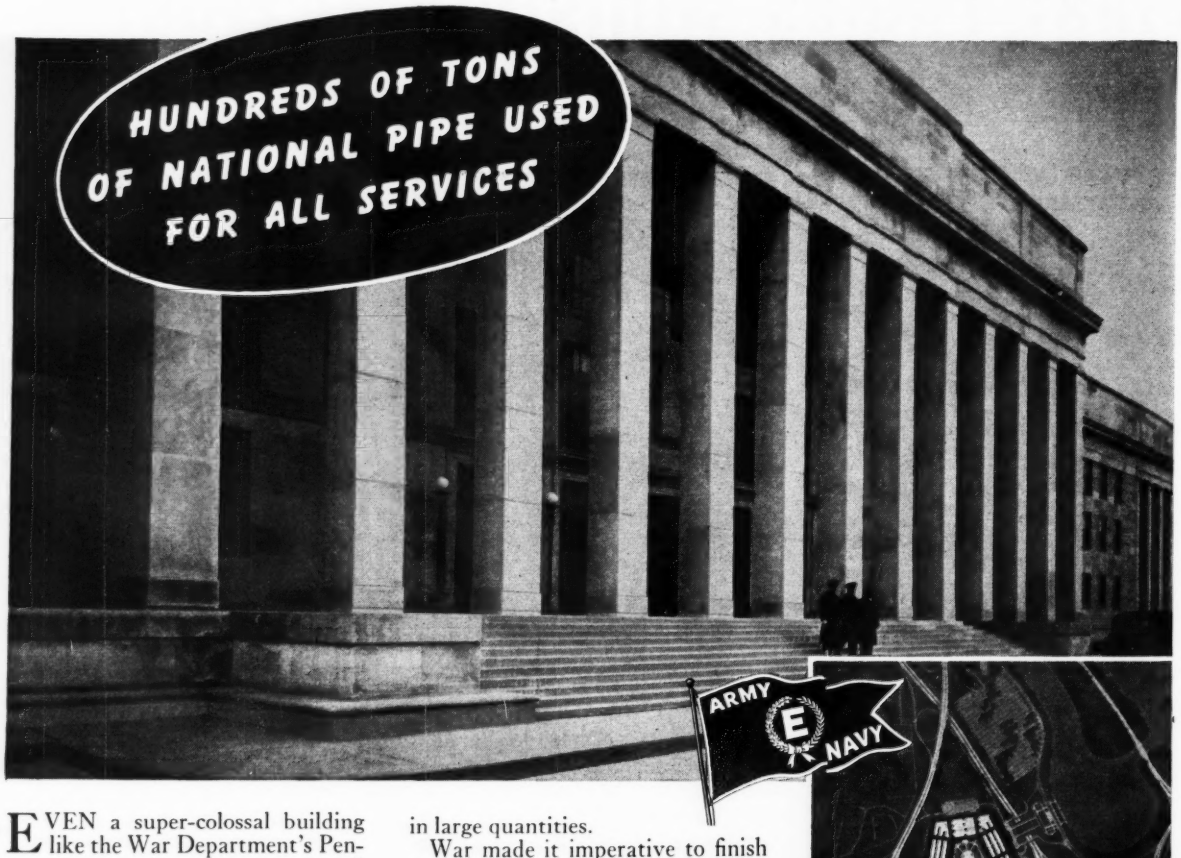
Firm Name.....

Street Address..... *City & State*.....

My ventilating problem involves:

☐ Heat ☐ Fumes ☐ Moisture ☐ Dust

PIPE PUTS "*Life*" INTO THE PENTAGON WORLD'S LARGEST OFFICE BUILDING



EVEN a super-colossal building like the War Department's Pentagon is so much stone and steel until its services bring it to life. When a building for 40,000 people is put up, it takes a fantastic network of water pipe, steam lines, air conditioning lines and other piping to make life comfortable under blazing summer sun and winter cold.

Many innovations were introduced into the construction of this building but when it came to piping, no chances were taken with substitutes of any kind. Time-proved, long-lasting steel pipe that architects and engineers have found so dependable in thousands of important buildings throughout the nation was used here in large quantities.

War made it imperative to finish the Pentagon in a hurry. The time allotted was one year—or as close to that as possible. Such construction speed made the easy workability and fast welding properties of NATIONAL Pipe a real asset. Actually the building was 90% completed in 15 months.

In addition to building programs, large quantities of NATIONAL Pipe and Tubes are being used in other types of war services. Hundreds of ships are being built which need thousands of miles of pipe. Great numbers of airplanes, tanks, trucks, gun mounts and much other military equipment all need pipe and tubing. And now the biggest oil line in the world is taking 1117 miles of huge 24-inch NATIONAL Seamless Pipe to deliver Texas oil to the east coast.

PENTAGON BUILDING—*New home of the War Department—is the largest office building in the world. Has more than 4,000,000 sq. ft. of floor space.*

Big things are done in war times but when peace comes again, NATIONAL Pipe and Tubes will play an equally important part in building a better world of the future.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

UNITED STATES STEEL

HOW AND WHY

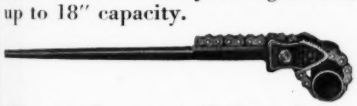
WILLIAMS' TOOLS AID WAR PRODUCTION

DATA ON "VULCAN" CHAIN PIPE TONGS

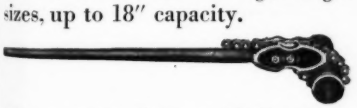
There are 6 types of Williams' Tongs, each offering certain advantages for particular classes of work. A knowledge of the features of these various types will enable users to better select the most efficient and economical type for the work at hand.

"VULCAN SUPERIOR": A universal service tong for *both* pipe and fittings. Has Reversible pipe-and-fittings jaw. Seven sizes, up to 12" capacity.

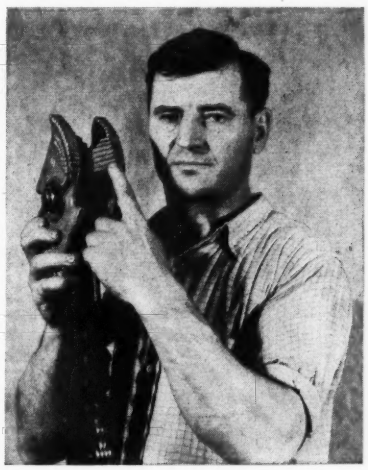
"VULCAN": The original "VULCAN" Pipe Tong — still the favorite oilfield tongs for general work. Chain swings from center and can be used on either side of the jaw. Eight sizes, up to 18" capacity.



"VULCAN SUPERTONG": Same design as "VULCAN" but forged from alloy and high-tensile steel. Provides 50% greater strength than "VULCAN" with no increase in bulk or weight. Eight sizes, up to 18" capacity.



"IMPROVED VULCAN": Same as "VULCAN" except jaws are double-ended and reversible, providing double service life. Seven sizes, up to 12" capacity.



The "V" recess in "Vulcan Superior" jaws assures quick, positive grip on fittings.

TYPES OF "VULCAN" CHAINS

While "VULCAN SUPERIOR" and "VULCAN" Tongs are furnished with *either* Flat Link or Cable Chain, all other types have Flat Link Chain only.

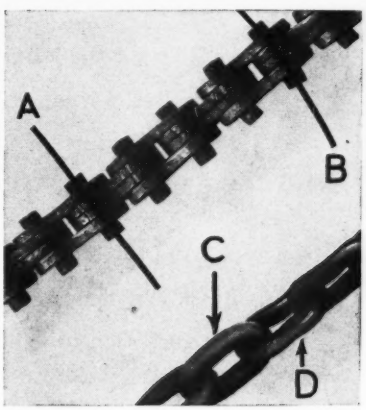
There are three types of Flat Link Chains for Williams' Tongs—"STANDARD", "XTRA-STRONG" and "SUPERCHAIN". "Standard" Chains are regularly furnished with all except "Supertongs" but "Xtra-Strong" Chains, providing approximately 40% greater strength, can be supplied at additional cost. "VULCAN SUPERTONGS" are regularly furnished with "Superchains". Every "VULCAN" Chain, regardless of type, is individually *proof-tested* on a standard tension machine to two-thirds of its breaking strain.

USE AND CARE OF TONGS

In using Chain Pipe Tongs the best gripping position is that which is midway of the jaw teeth, or rearward therefrom. The bending of the tong handle under load is not evidence of a defect. Such bending is intended to act as a warning and "safety valve" in advance of breakage of chain, which would incapacitate the tool.

In Flat Link Chains on tongs, an occasional inspection of the first two or three rivets and links adjacent to the swinging, or anchor link should be made, since the load is greatest at that point. Badly bowed, or curved rivets indicate that the chain has been loaded almost to breaking strength and is probably unsafe.

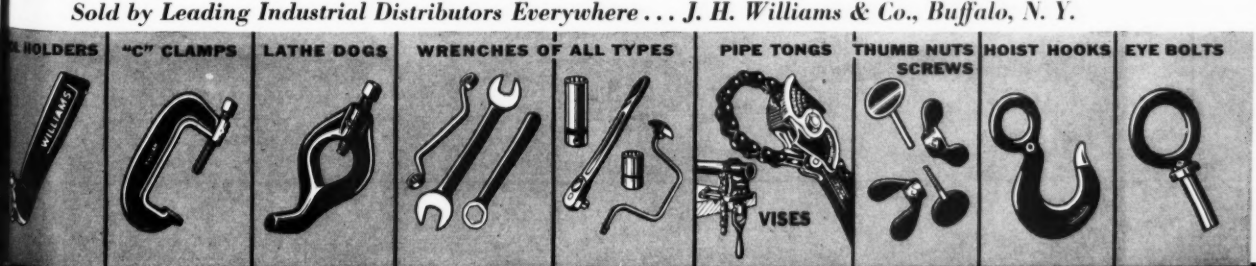
In Cable Link Chains, the links give warning by stretching and pulling "rigid" if the breaking point is approached.

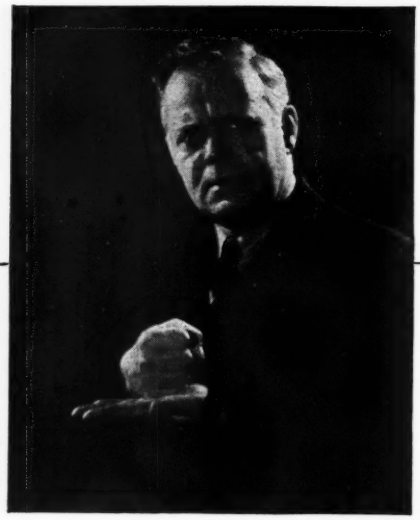


A. Straight rivet indicates chain is safe.
B. Curved or bowed rivet—unsafe.
C. Safe link indicated by normal shape.
D. Link stretched or pulled "rigid"—unsafe.

WILLIAMS
SUPERIOR DROP-FORGED TOOLS
Headquarters
for over half a century for
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.





...I'VE JUST BEGUN TO *FIGHT!*

"Sure, the war has hit us plumbers where it hurts. But, omit the flowers, please, *I've just begun to fight!*"

"I've got the job of my life to do—on the sort of business I ought never to neglect. I mean *repair* and *maintenance* work right here in this town. Mister, production in the war plants begins with health and comfort in the homes."

"And the building business isn't dead for the Duration, either—not while my wholesaler is glad to help me spot the Government jobs, and I've got the gumption to fight for my share."

"My son is in the Army now. Believe me, this business he helped me build is going to be here when he gets back! I'm one of the plumbers who licked the Depression—*I've got what it takes to beat this war!*"

•

Paid for by the Scovill Manufacturing Company, Waterville Division, in salute to the thousands of plumbers who have stuck to their vital job of serving the Home Front well.

•

BUY WAR BONDS NOW
FOR YOUR CRANE
BATHROOM AND KITCHEN
after "V" day
Free
ASK US HOW YOU CAN GET A COPY OF THIS BEAUTIFUL BOOK—FULL OF IDEAS FOR BATHROOMS AND KITCHENS AFTER THE WAR
HEADQUARTERS for PLUMBING and HEATING
FOR REPAIRS, MAINTENANCE AND WAR HOUSING
Ideas for after "V" day
MRS. AMERICA IS TELLING
WHAT SHE WANTS
by Crane

This colorful poster will help sell the idea of postwar planning to your propects.

The poster is designed to attract prospects to your shop. We will furnish you with questionnaires to give to these prospects to learn what they want in plumbing and heating after "V" day. Every prospect returning this questionnaire will receive a copy of this beautiful book.

Many of tomorrow's home owners are planning their dream home now. Many are putting their savings into War Bonds and will be ready to build their new home or modernize their present one when the war is won.

But what will Mr. and Mrs. America want in equipment in their dream home of the future? Frankly, we don't know but we are finding out. Already on the press is a colorful book which will be sent to thousands upon thousands of home owners and prospective home owners throughout the country. With it goes a questionnaire asking specific questions about plumbing and heating. The Crane line of the future will be based upon the known preference of America's buyers as evidenced from this investigation.

To plumbers who have the space to display it, we will furnish a large, colorful poster promoting the idea of buying War Bonds today, for the home of the future. With this poster we furnish you questionnaires to give to those requesting them. Every prospect returning a questionnaire will receive a copy of this colorful book full of ideas on bathroom, kitchens and heating systems.

Your Crane branch or Crane salesman will be glad to give you more information on this important project. Ask them.

CRANE

CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVE., CHICAGO

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING CONTRACTORS

While they serve—they think of HOME

It's OUR WAR let's fight it NOW!

THE field kitchens of Guadalcanal and Africa are models of efficiency for their particular job — keeping our soldiers well-fed; but there is small resemblance to the kitchen at home.

Your sons and our sons are going to get a tremendous kick out of coming back and-eating "home cooking." Home is the place they are longing for — and are fighting for — the place they will cherish and improve with all the wonderful new conveniences that they can possibly afford. And what a market that will be!

We at Youngstown Pressed Steel recognize what an important part the kitchen will play in this new peace era and are preparing to give plumbers the finest kitchen sales opportunities they have ever had. YPS kitchens will be worth waiting for!

Youngstown PRESSED STEEL DIVISION OF MULLINS MANUFACTURING CORP. WARREN, OHIO

BUY WAR BONDS and STAMPS

Here's the answer to today's need for a

NEW NON-METALLIC PIPE

for drainage and many other non-pressure uses

- NON-METALLIC—saves critical materials. Quick delivery; no priority needed.
- DURABLE—pipe of this composition has been time-tested underground for 50 years.
- NON-CORROSIVE—resistant to corrosion or chemical attack.
- EASY TO INSTALL—light in weight. Easy to truck and lay. Saves time and labor.
- ECONOMICAL—low in both original and installation costs.

Orangeburg Fibre Pipe is not a substitute—but an improvement over cast iron and tile pipe for many domestic and industrial non-pressure uses including:

- *Connections from House-to-Sewer or Septic Tank*
- *Septic Tank Filter Beds*
- *Downspouts; Storm Drains*
- *Drainage of Farmland*
- *Foundation Footing and Sub-Soil Drainage*
- *Sleeves in Concrete Walls and Floors; Weepholes*
- *Greenhouse Irrigation*

It's light and easy to handle. Can be sawed, bored, and worked with ordinary tools. In laying tight lines, permanently watertight joints can easily be made by driving tapered coupling and pipe together. It is resistant to alkalies, salts, and dilute acid solutions—and being non-metallic, does not tuberculate.

Also available with perforations on underside, especially recommended for septic tank filter beds. This ORANGEBURG feature provides complete drainage and eliminates clogging. Snap couplings keep pipe in line, speed installation, protect joints against infiltration.

Now being advertised in leading home and farm magazines. Write for information on this new pipe today!

THE FIBRE CONDUIT COMPANY
Orangeburg, N. Y.

THE FIBRE CONDUIT CO. ORANGEBURG N.Y.

MAIL COUPON TODAY

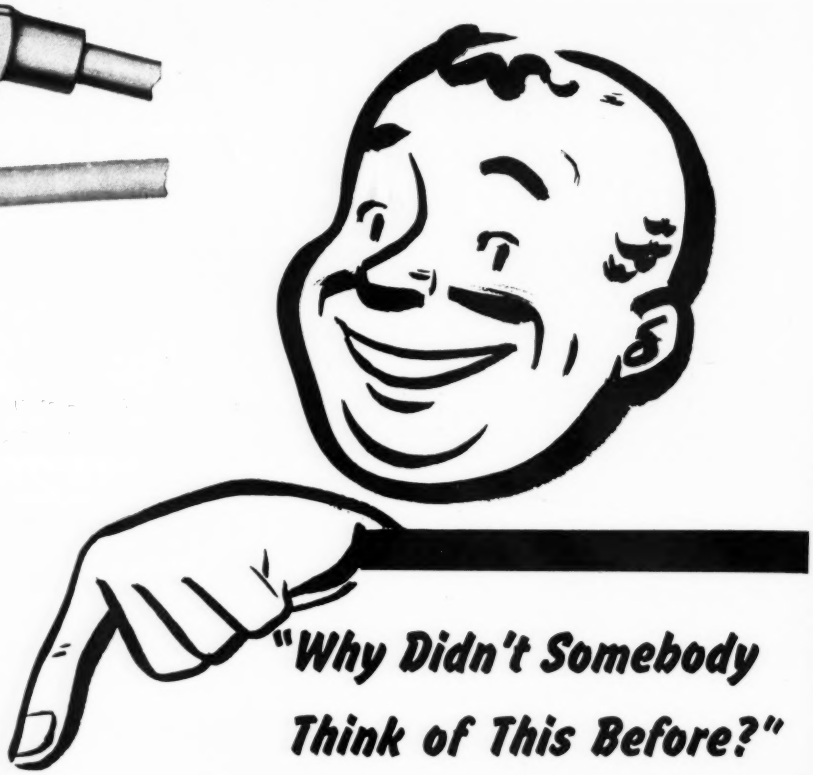
THE FIBRE CONDUIT COMPANY
Orangeburg, N. Y. (DE-4)

Please send descriptive literature on Orangeburg Fibre Pipe.

NAME.....

COMPANY.....

ADDRESS..... CITY.....



"Why Didn't Somebody Think of This Before?"

2 MODELS for ALL Jobs!

Model B-200—For Tanks 11½" to 13¼" deep.

Model C-300—For Tanks 13" to 14¾" deep.

This is but one of the many exclusive features of the new Nigg S&S Cast Iron Ballcock. It's 100% anti-siphon. One-piece, one-movement glass plunger. No top flooding. Handles all pressures. Fool-proof in operation.

"That adjustable feature of the new Nigg S&S Cast Iron Ballcock sure saves me a lot of time and money! Up till now, I've had to carry several different lengths in stock and on my service truck, just to be sure I had the right size for every tank. Now, all I need is 2 Nigg S&S Ballcocks, because just 2 sizes fit ALL tanks. Just leave it to that Nigg outfit to think of a time and money saver like that."

Yes, sir! Just one model of the new Nigg S&S Ballcock fits all popular makes of tanks. That means less money tied up in slower moving sizes and less time lost, having to go back to the shop for the right size when the model you have on the service truck doesn't fit.

S&S CAST IRON BALLCOCK PATENTED

SOLD BY ESTABLISHED PLUMBING SUPPLY JOBBERS EVERYWHERE

PLUMBING DIVISION

NIGG ENGINEERING CO.

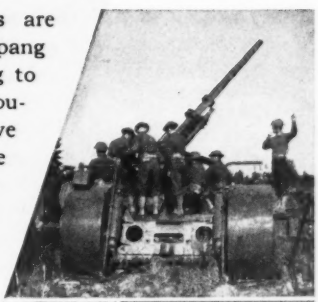
GENERAL OFFICES: COVINA, CALIFORNIA

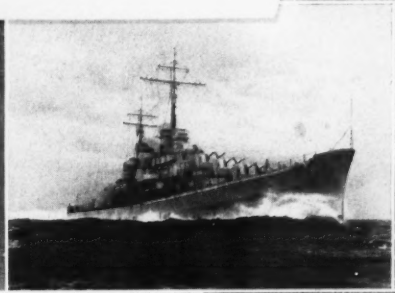
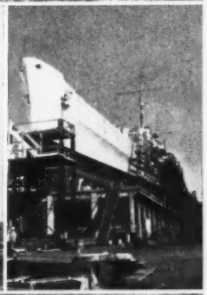
FACTORIES: CALIFORNIA AND OHIO

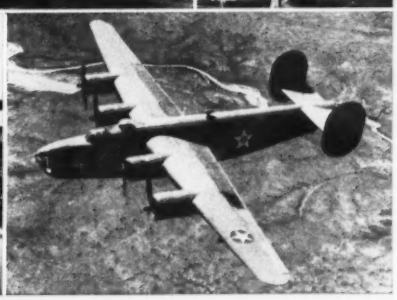
Pipe

Vital in every type of war equipment

Wherever American boys are fighting for our freedom, Spang Pipe is in there too, helping to win the final Victory—for thousands of tons of Spang Pipe have been, and will continue to be allocated to every type of armament and war production equipment for our fighting forces.





Official Photos U.S. Navy: U.S. Army Signal Corps: U.S. Maritime Commission: U.S. Army Air Force.

ARMY E NAVY

Over the Ambridge Pa. plant of The National Supply Co., Spang Chalfant Division, where Spang Seamless Pipe is produced, flies the Army-Navy "E" Flag, as a daily incentive to the workers for still greater production achievement!

Sold by

SPANG CHALFANT, INC.

General Offices: GRANT BUILDING, PITTSBURGH, PA.

Sales Offices:

Boston, New York, Philadelphia, Atlanta, Chicago, Tulsa, Pittsburgh, Houston, Denver, San Francisco, Los Angeles

Spang Products: Spang Seamless Pipe · Spang CW Pipe
Spang Welded Pipe · Central Rigid Steel Conduit

OLSON-ITE *Plastic* SEATS *Selected* FOR ONE OF THE WORLD'S LARGEST PLANTS!

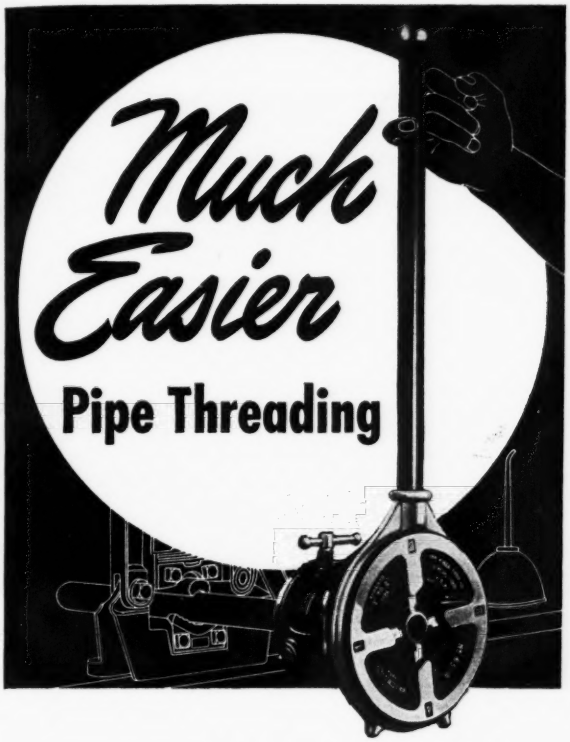
AMERICA'S FOREMOST ARCHITECT SPECIFIES OLSON-ITE

OLSON-ITE *Plastic Seats*

Here is indisputable proof of the outstanding superiority of OLSON-ITE Plastic Seats! From a highly competitive market 1500 OLSON-ITE Plastic Seats, above all others, were selected for installation in one of the world's largest plants. For government, industrial and civilian projects, OLSON-ITE Plastic Seats have proved superior in every important requirement. For complete descriptive literature, write Dept. SCS-5831 today.

Swedish CRUCIBLE STEEL COMPANY

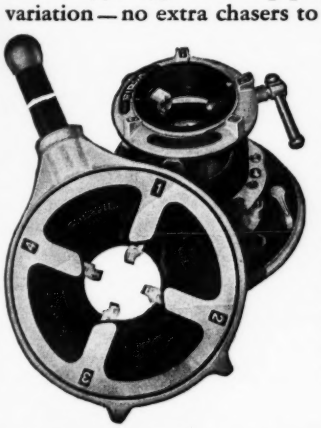
8561 BUTLER AVENUE . . . DETROIT, MICHIGAN

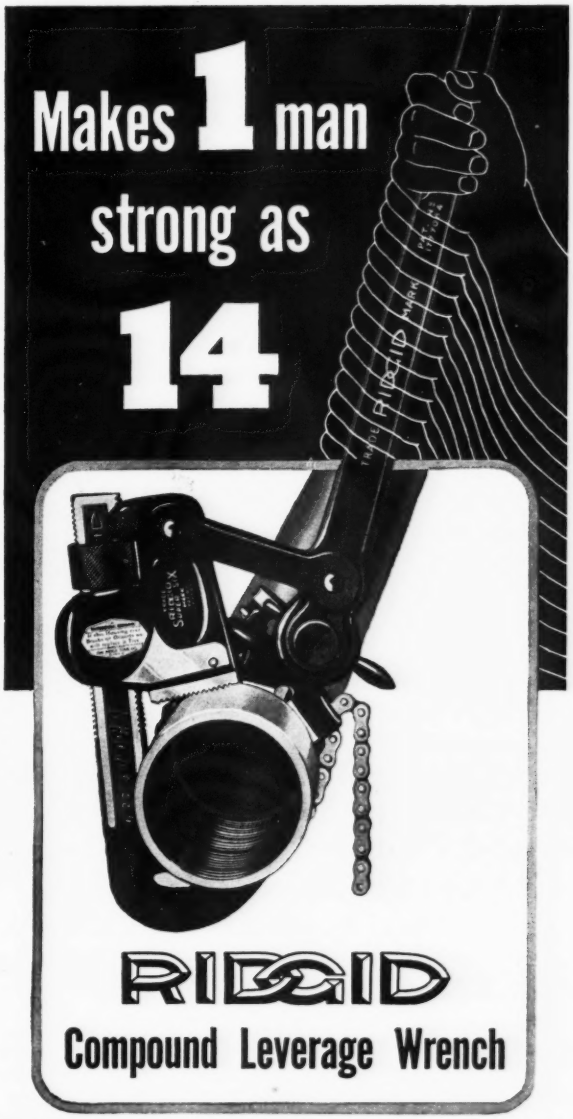


RIDGID No. 65R

Threads 1" to 2" Pipe with same dies

LOOK at the time and work this No. 65R saves you. One set of chasers gives you smooth perfect threads on 1", 1¼", 1½" and 2" pipe, any metal, any thread variation — no extra chasers to bother with; adjusts to size in 10 seconds. Foolproof workholder sets instantly, only 1 screw to tighten. Because of straight-line action ... handle to head to chasers ... it threads so easily you can turn it with your little finger. A durable steel and malleable tool with many other features. Ask your Supply House.





RIDGID

Compound Leverage Wrench

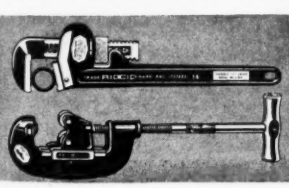
THIS compact powerful pipe wrench breaks out any frozen joint, saves the waste of smashing off old valves and fittings so valuable today, quickly pays for itself in salvage. Having 14 times the leverage of a regular wrench of similar capacity, it makes one man strong enough to make up any new job or take down an old job. Short handle helps in tight quarters. Easily attached to any pipe or fitting. Four sizes for pipe to 8 inches OD. A profitable work-saving tool that is invaluable in any kit. . . . It pays you to ask your Supply House.

Buy RIDGID Pipe Tools at Supply Houses Everywhere

RIDGID

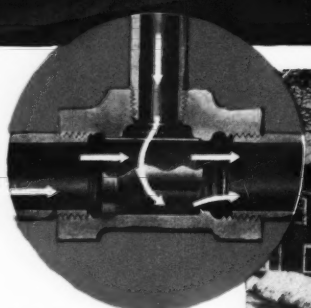
★ PIPE TOOLS ★

THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U.S.A.



Fast-Working Tools for War . . . and the Busy Peace That's Coming

One PIPE DOES THE WORK OF Two

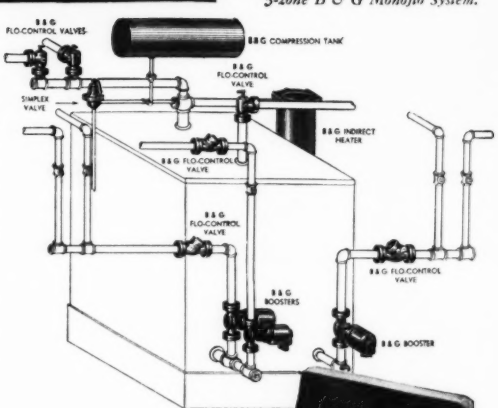


B & G Monoflo Fittings are installed in place of the usual tee connection between main and riser. A balanced distribution of water to each radiator is achieved by the patented internal construction, but without excessive resistance.

AT GREAT LAKES NAVAL TRAINING STATION

These officer residences are a few of many Great Lakes buildings heated with forced hot water and using a B & G Monoflo *single* main piping system. The ability of this type of system to furnish heat in amounts at all times equal to the heat loss, keeps indoor temperature at the comfort level, regardless of the weather.

Typical boiler connections for 3-zone B & G Monoflo System.


B & G FLO-CONTROL VALVES
B & G COMPRESSION TANK
B & G FLO-CONTROL VALVE
SIMPLEX VALVE
B & G INDIRECT HEATER
B & G FLO-CONTROL VALVE
B & G FLO-CONTROL VALVE
B & G FLO-CONTROL VALVE
B & G BOOSTERS
B & G BOOSTER

Today's pressing need for conservation of war-vital materials is well served by an expertly engineered little device now famous as the B & G Monoflo Fitting. A genuine advance in heating equipment design, it permits the use of a *single* main instead of two when installing a forced hot water heating system. This simplification, plus the great reduction in pipe sizes made possible by mechanical circulation, materially cuts the weight of metal required to give the comforts of *radiant* hot water heat.

B & G Monoflo Fittings, without introducing excessive resistance, assure a smooth and uniform distribution of hot water to the heating units, whether above or below the main. Balancing of individual radiators is eliminated.

A B & G Monoflo System is simplicity itself to design. It offers a neater installation, with piping easier to conceal. It has no size limitations—buildings requiring as much as a quarter-million sq. ft. of radiation are successfully using it. The system is made to order for zoning, the modern way of obtaining better heat control and minimum use of fuel. Complete design information is given in the B & G Hand Book—send for your copy.

Complete instructions for designing B & G Forced Hot Water Heating Systems.

B&G

BELL & GOSSETT COMPANY

MORTON GROVE, ILLINOIS (Suburb of Chicago)

Canadian Licensee: S. A. Armstrong, Ltd., 115 Dupont St., Toronto

MONOFLO SYSTEM

Standing Guard

OVER THE FUTURE OF YOUR BUSINESS

Standing guard over America's future is more than a job for our capable armed forces — it concerns American business, too. In your case, that means the business of supplying and servicing heating equipment. It's important to you now, and even more important to our country's progress after the war is won.

Guarding the future of your business is no easy job — but it's made easier when the equipment you sell is Perfex controlled. *Two* responsible manufacturers stand back of Perfex-controlled equipment. Perfex engineers work with those of the equipment manufacturer to fit the controls to the job.

Even though you may seldom meet the Perfex Twins face to face, remember they're working for you and your future. When that future arrives, make sure they are still with you, because wherever you find the Twins, there you will find controls which have kept pace with war-accelerated developments in the heating industry.

PERFEX CORPORATION

500 West Oklahoma Avenue *Milwaukee, Wisconsin*

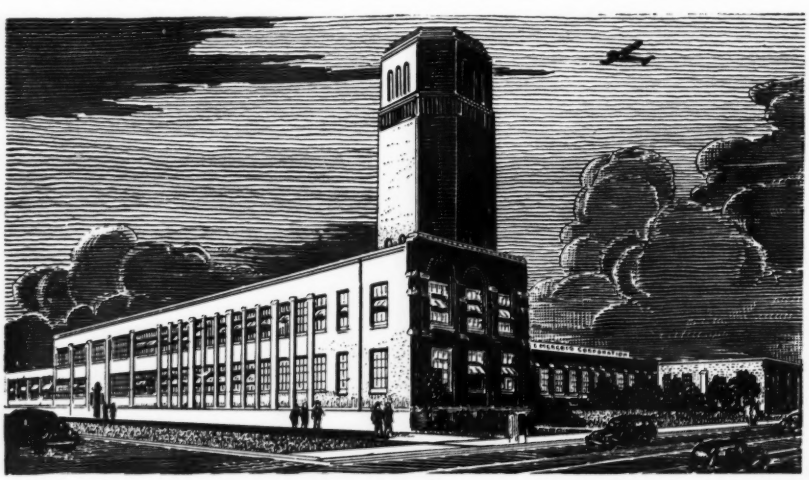
MERCOID AUTOMATIC CONTROLS

FOR HEATING, AIR CONDITIONING REFRIGERATION AND VARIOUS INDUSTRIAL APPLICATIONS

The Only 100% Mercury Switch Equipped Controls

The Mercoid line of automatic controls are the results of over two decades of wide experience in the engineering and manufacture of automatic controls ★ Realizing the responsible duties imposed in the functioning of automatic controls, the Mercoid organization deems it imperative that nothing be spared in material quality, workmanship, or time in perfecting every detail of design and construction that will add to a better and more reliable operating instrument ★ Thus, from the very beginning, Mercoid Automatic Controls have employed the now famous hermetically sealed Mercoid Switches. These mercury contact switches are designed to give an operating result not obtainable in the open contact types ★ The "making" and "breaking" of an electrical circuit in a control should be as near trouble-free as possible. Mercoid Mercury Switches are the best answer to the problem. Long years of service under various conditions prove this ★ Mercoid mercury switches are all of special design, made under the most exacting conditions to meet the rigid specifications required. The trade mark "Mercoid" is registered in the United States Patent Office ★ The advantages of Mercoid Switches are many. They cannot be affected by dust, dirt or corrosion; nor are they subject to open arcing or pitting and sticking of the contacts. Many of them are used on applications involving millions of operations. The exclusive use of these switches is one of the distinguishing features of Mercoid Controls ★ There are a number of other outstanding characteristics in the design, construction, and operation of Mercoid Controls described in Mercoid catalog Number 600—a copy will be sent upon request.

THE MERCOID CORPORATION ★ 4231 BELMONT AVE. ★ CHICAGO, ILL.



MERCOID AUTOMATIC CONTROLS

FOR HEATING, AIR CONDITIONING REFRIGERATION AND VARIOUS INDUSTRIAL APPLICATIONS

To help G-E Dealers this summer – and after the war

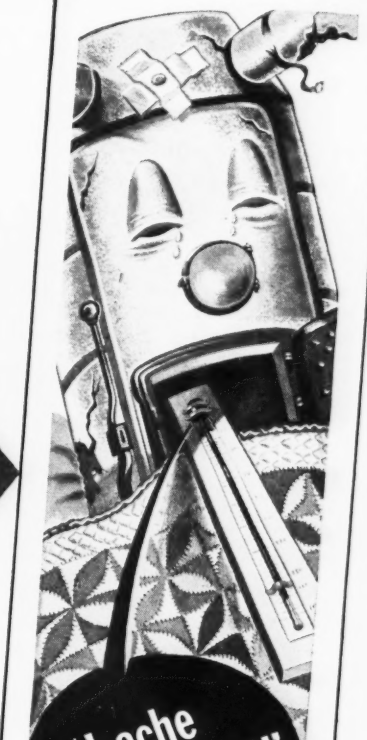
At the right, you see the second of several G-E advertisements urging home-owners to have their heating plants checked, cleaned, repaired this summer. This message will appear in June issues of *American Home* and *Better Homes and Gardens.*

It tells home-owners to call *G-E Dealers* for this service—no matter what fuel or what make furnace they use. This should help you in two ways:

1. To get *extra* service business during the slack summer months (instead of all at once next fall);
2. To put you in touch with good prospects for new G-E heating equipment after the war.

We believe that this is a practical way to help G-E Dealers meet war-time conditions. As soon as the present heating season ends, go out after servicing business. It's not too early to start lining up prospects right now! *General Electric Co., Heating Division 3164, Bloomfield, New Jersey.*

GENERAL ELECTRIC



"I ache all over, Doc!"

"Chills and fever all last winter...pipes no good ...need new lining for my whole insides. Never get through another winter, Doc, unless you give me the works."

Why take chances on possible service headaches next fall? With heating equipment mechanics getting scarcer...and *busier*...the smart thing to do is to have your heating plant cleaned, adjusted and repaired *this summer* before the rush begins. No matter what furnace or fuel you're using, your local G-E Heating Dealer can help you. Call him today!

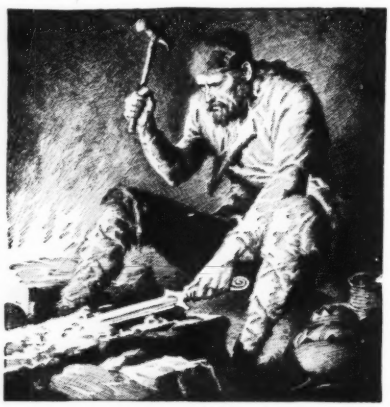
Another thing – ask for our free booklet, "Tips on Fuel Conservation." Practical ways to keep warm and save fuel. Address *General Electric Co., Heating Division 3126, Bloomfield, N. J.*

GENERAL ELECTRIC

History Repeats . . . The Bronze Age

Tremendous demand for copper and its alloys in making vital war materials bans use of the precious red metal for heating and plumbing in residences and commercial buildings.

Haya, mate of Harth the Mighty, was annoyed when she awoke that morning some thousands of years ago. Crouched on his haunches at the mouth of the crude shelter, her spouse was industriously pounding the family utensils and ornaments into weapons. If he bothered to explain at all, Harth grunted that the tribe was at WAR . . .



. . . cooking pot into sword

that because copper was essential to win the fight, household use of the gleaming metal was out for the duration.

And this year of war, 1943, found many a U. S. housewife in a similar dither. She wanted brass fixtures for the bathroom, copper gutters, flashing and bronze screens. But America was at war — victory was dependent on copper alloys for the machines and munitions of war. For home building the vital metal was out — until men again laid down their arms.

Supply. . . and Demand

America produces a great part of the world's copper, also a large percentage of the world's brass, an alloy of copper and zinc. No. 1 fabricator in the field is The American Brass Company, operating 13 U. S. A. and Canadian plants.

As a result of research started over a century ago, and continuing today, the industry has developed a thousand uses for copper and its alloys. American life is safer, more comfortable, convenient and attractive because of copper's many familiar advantages: rust-immunity, corrosion-resistance, easy workability.

In peacetime, the output of copper is ample to supply the ever-increasing demands of industry and civilian needs. But war as it is fought today, requires the entire peacetime output, plus many millions of additional pounds.

Where it Goes

Hundreds of thousands of pounds of Anaconda Copper and Brass are turned out every day by American Brass Company workers for making shell cases alone. Imagine the amount needed for just calibre .50 machine gun cartridges, which may spew from the modern fighter plane at the rate of 3,500 per minute . . . and for the huge steel projectiles fired from heavy artillery and battleship guns, each of which requires a copper or copper alloy rotating band to give the projectile the spin that insures accuracy in flight.

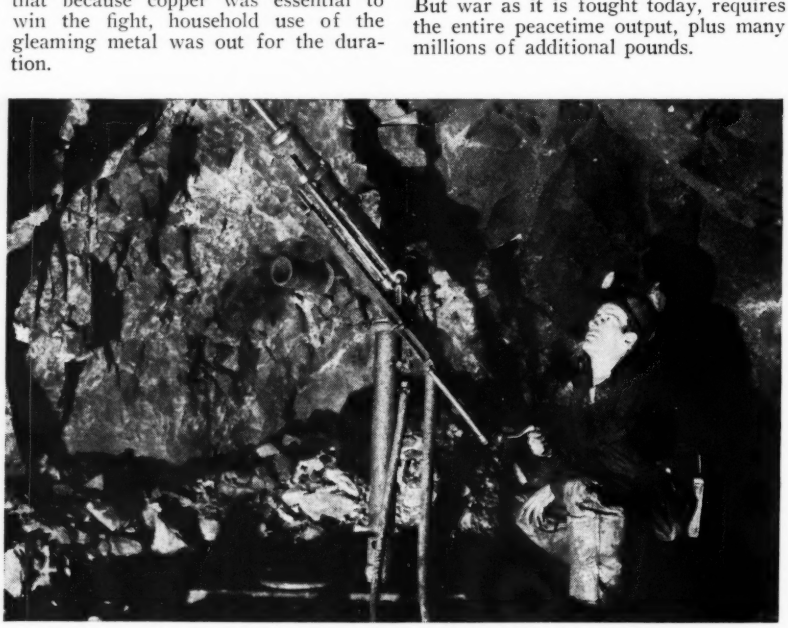
Home Front

American plumbers, despite present lack of copper and brass, can look forward to increased use of these standby plumbing and heating materials when peace comes. Copper tubes for instance will fill a widespread need for economical, easy-to-install piping in homes and farms and industries—not just for hot and cold water lines, but for more efficient heating lines, and for the new panel heating installations as well.

. . . copper saves repair bills

Wanted: Copper Scrap

As in the production of steel, scrap copper is important in the production of new metal. Mining capacity alone cannot meet the nation's expanded wartime needs. Scrap must make up the deficit. Inducement to those who think it isn't worthwhile to turn in the small quantity of scrap copper and brass they have on hand: relatively, a single pound of copper scrap is as important as 45 pounds of steel in prosecuting the war effort.



Published in the interest of a better informed war effort by

THE AMERICAN BRASS COMPANY ANACONDA

General Offices: Waterbury, Connecticut • *Subsidiary of Anaconda Copper Mining Company*

4301D

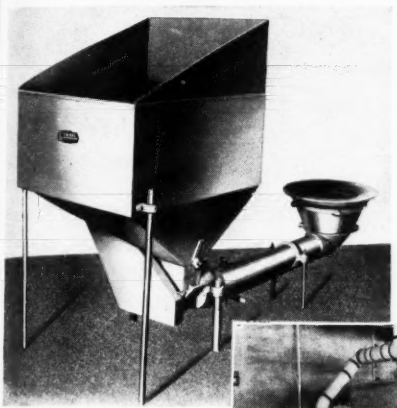
Business that's... **ALL YOURS...*Now!***

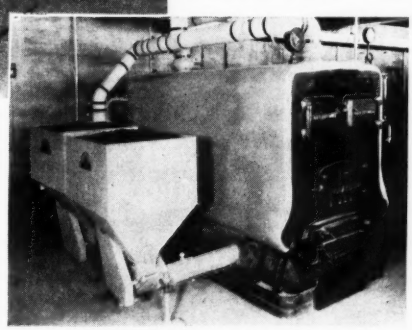
CAPTURE THIS MARKET WITH GILKOAL!

• You Help the War Effort! • You Help Your Customers! • You Help Yourself!

WITH THE **SIMPLE ... DEPENDABLE ... MODERATELY PRICED**

GILKOAL *Anthracite* STOKER





The product of a manufacturer long engaged in building first quality stokers. A dependable unit you can sell with confidence.

●

At Right: A twin GILKOAL Stoker installation.

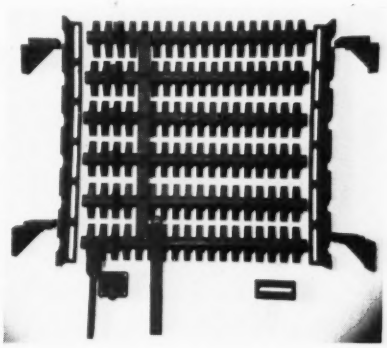
CONVERSION prospects look to you for dependable advice and for an equally dependable product! They can't afford to take chances and they rely upon you, upon your judgment and upon your recommendations. You justify their faith in you . . . you earn their gratitude . . . you build a sound foundation for additional and profitable present and future business . . . when you recommend GILKOAL Anthracite Stokers!

Available in the single unit size which meets the requirements of the 5,000 to 10,000 gallon fuel oil user and in the twin units for larger jobs up to 20,000 gallons, the GILKOAL Stoker is ideally suited to today's broadly expanding commercial and industrial stoker market. Thousands of these stokers are now serving their owners to the utmost of satisfaction . . . conserving fuel and delivering genuine heating comfort. The GILKOAL Stoker will do the same for your customers.

CATSKILL *Conversion* GRATES

The Only UNIVERSAL Conversion Grate for Larger Type Boilers

Every conversion job deserves the best, and that's why it's so important to specify CATSKILL Conversion Grates! They are made in one standard size for boilers of all makes and are readily cut to fit. Furnished with all necessary parts for simple, quick, accurate installation—even though boiler has no grate supports or no provision was made in the original equipment for grates. Readily adaptable to cast iron, steel or brick-set bases. Especially designed for boilers commonly used in schools, public buildings, apartment houses, commercial type buildings, etc.



Get complete details on these important contributions to the conversion-conservation movement without delay . . . . .

Write or wire to-day!

CATSKILL *METAL WORKS*
Catskill, New York

Manufacturers of GILKOAL Stokers and CATSKILL Conversion Grates.

"WHEN THE GREAT DAY COMES I WANT PERMA-GLOSS"

"Joe and I have a 'for-the-duration' home now, but we're buying War Bonds up to the limit . . . and after Victory we'll use that money to build a home of our own.

"I know one thing right now — when we do build, I am going to have PERMA-GLOSS sanitary ware. Its glossy surface is so easy to keep clean . . . it won't chip or crack, and it costs no more than an iron enameled sink. I know what I want, and I want PERMA-GLOSS."

Today, PERMA-GLOSS sinks, through their installation in government housing units, dormitories and camps, are making new friends by the thousands. Though these "for-the-duration" homes may be temporary, daily contact with PERMA-GLOSS sanitary ware is making Mr. and Mrs. War Worker—your eventual customer—conscious of its all-around high qualities.

PERMA-GLOSS has been developed to meet the government restrictions on iron and steel sanitary ware. PERMA-GLOSS is strong and durable, will neither dunt nor craze, and the body is acid *proof* throughout, not merely acid resistant.

We'd like to send you a new bulletin showing the many different designs and combinations of PERMA-GLOSS Fixtures. It will be sent promptly on request.

General Ceramics Co.

GENERAL CERAMICS COMPANY • SANITARY WARE •

SANITARY WARE DIVISION
METUCHEN • • NEW JERSEY

3810

precision ★ ★ ★

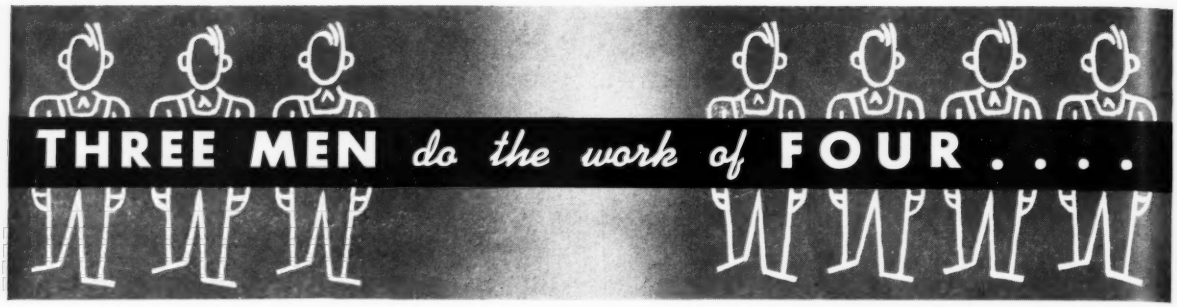
starts with the core

★ ★ ★ Strict laboratory control plus the most modern equipment fortified by many improvements during 25 years of "know-how" are the reasons for the reputation for quality that the Mueller Brass Co. enjoys today—Yes, precision starts at the very beginning in the manufacture of STREAMLINE fittings—**precision starts with the core.**

Today modern equipment and mass production hasten STREAMLINE fittings through the coremaking department, on through foundry and machine shops to our armed forces for installation in fighting ships of all kinds.

When the post-war period dawns, an improved and extended line of STREAMLINE products will have their full share in the rebirth of America and the world in the building of better homes for its people. STREAMLINE bronze fittings and STREAMLINE copper pipe will once more protect the health of the nation as they are now protecting the health and lives of our men in the service.

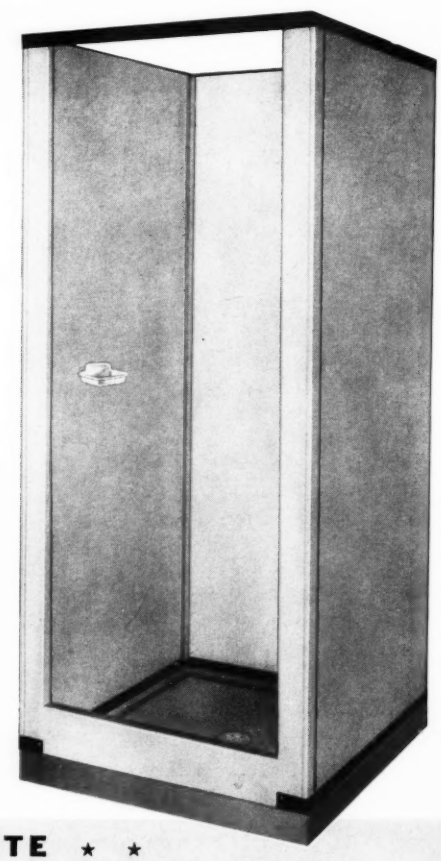
STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN



.. when you install .. Bathe-Rite SHOWER CABINETS

Contractors can install MORE BATHE-RITE Shower Cabinets in a day—easier and at less cost—to better serve the urgent needs of war housing, war plants, camps and personnel buildings. . . . And today, when time and labor savings are important, this is a great advantage.

In BATHE-RITE Shower Cabinets you have fewer pieces to handle, and these parts go together so simply and easily that even UNSKILLED workers can assemble them in record-breaking time. Exclusive features like the Separate Mounting Frame, and Friction Joint Assembly help get multiple shower installations finished in a hurry. . . . Attractive, sturdy, rigid shower facilities that meet the highest wartime standards of quality and convenience on thousands of projects.



Space-Savers for Home Remodelling

Renovating old buildings for multiple war housing, Bathe-Rites require less space—30" or 32" square with no space lost to wall thickness. Their low cost, simple installation and high quality are important advantages.

WRITE or WIRE for DETAILS and PRICES!

Delivery assured on any quantity. Give name of project and quantity required.

BATHE-RITE Shower Cabinets

Two standard sizes—30 x 30 x 75", 32 x 32 x 75"—meet all wartime needs . . . Comply with U. S. War Department and F. P. H. A. Specifications. Packed for easy handling.

Bathe-Rite division
MILWAUKEE STAMPING COMPANY
804S South 72nd Street, Milwaukee, Wisconsin

★ ★ QUALITY-BUILT by BATHE-RITE ★ ★

THREADS NIPPLES AS SHORT AS 3½" IN THE 2" SIZE ON BOTH ENDS

No Nipple Chuck Required!

ACTUAL SIZE 2" x 3½"

The Oster No. 502 "Pipe Master" is equipped with universal gripping front chuck with extended jaws, scientifically designed; capable of holding nipples as short as 3½" in the 2" size for threading on both ends, as illustrated. Stock as short as 2½" can be threaded on one end. In either case, no nipple chuck is required.

Rear chuck has three plain jaws, universal centering and quick acting, instantly centering all sizes within range of machine and assuring uniformly accurate threads on any lengths.

Those two advantages are just "samples" of the 17 distinctive features of the Oster "Pipe Master." Write for complete details NOW! Or, use the convenient form below.

OSTER

FOR QUICK ACTION MAIL THIS

THE OSTER MANUFACTURING COMPANY
2045 East 61st Street • Cleveland, Ohio, U.S.A.

☐ Send illustrated catalog on "The Pipe Master."
☐ Ask your nearest distributor to see me.

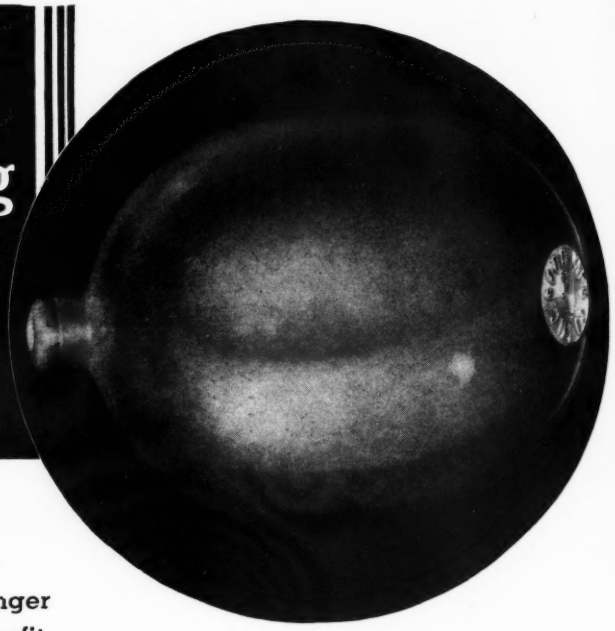
Name .....

Company .....

Street .....

City and State .....

Don't Let Shortage of Critical Plumbing Repair Materials Rob You of Profits



If you are having difficulty in getting plumbing repair parts made of materials required for the war, you no longer need to turn down jobs and lose your profit.

For now "Good" can supply you quickly, without high priority, with PLASTIC Flush Valves, one-piece Floats, Flush Elbows, Overflow Tubes, Guide Arms, Shower Curtain Hooks, Stoppers, etc.

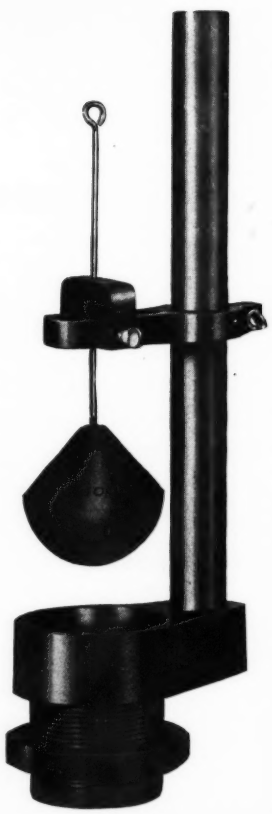
We also have on hand a stock of 2500 other repair parts which can be shipped promptly.

The Good Plastic Tank Float is made all in one-piece. It has no seams to leak, nothing to corrode. It is practically indestructible and more buoyant.

"Good" PLASTIC Flush Valve for low tanks is made entirely of plastic, except for the wire, screws and rubber bulb.

Because plastic cannot be pitted or corroded by water, this new Flush Valve will last longer than brass valves.

Write today for catalog and prices.

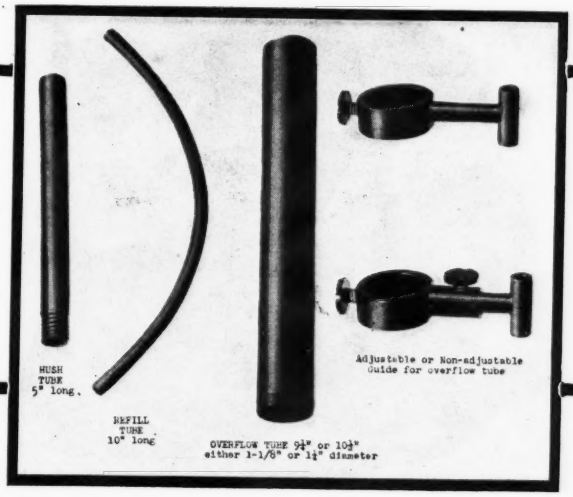


GOOD MANUFACTURING CO., INC.

For 47 years, a complete line of plumbing repair materials.

200-208 Lincoln Avenue, New York, N. Y.

"Good" Plumbing Repair Materials


HUSH TUBE 5" long.
REFILL TUBE 10" long
OVERFLOW TUBE 9½" or 10½" either 1-1/8" or 1¼" diameter
Adjustable or Non-adjustable Guide for overflow tube

A GUIDE TO PLASTIC PLUMBING ACCESSORIES

NEW! *TANK TRIM REPLACEMENTS*

A. G. Tompkins Co. announce that they can supply promptly the following All-Plastic Plumbing Fixtures and Accessories for Army, Navy, war construction and rated civilian replacements.

SHOWER HEADS
COMBINATION SHOWER
ESCUTCHEON and ARM SHOWER-HEAD
CURTAIN RODS 5 ft. & 5½ ft.
FLANGES
ESCUTCHEONS
TUBING—RODS—SHAFTS
FAUCET HOLE COVER
MIDGET CHAIN STAY
LARGE CHAIN STAY
PLASTIC EXTENSION TUBES
P. O. PLUGS—drains
1⅛" STOPPERS
REFILL TUBES
HUSH TUBES
OVERFLOW TUBES
GUIDE ATTACHMENTS to overflow tubes for flush rod.
FLUSH ELBOWS
NUTS

A. G. TOMPKINS COMPANY

Molding, extruding and fabrication of all-plastic products

90 WEST STREET, NEW YORK

SALES REPRESENTATIVES

J. M. KANE
P. O. Box 1552
Fort Worth, Texas

CHARLES F. STUMPF
417 West Ohio Street
Chicago, Illinois

BERGER ASSOCIATES
1900 Euclid Avenue
Cleveland, Ohio

J. EDWIN ASPINALL
314 East New York Street
Indianapolis, Indiana

W. G. SCHWARTZEL
404 Bon Air Avenue
Pittsburgh, Pennsylvania

LOU C. FALKENHAGEN
907 Northwest Irving
Portland, Oregon

A. F. BECKER
305 Buder Bldg.
St. Louis, Missouri

A. C. SCHUTZE
393 W. Central Avenue
St. Paul, Minnesota

FRED F. TEN EYCK
758 South Irolo
Los Angeles, California

J. W. WORTHINGTON
401 North Broad Street
Philadelphia, Pennsylvania

E. A. MOODY & CO.
3 and 4 Schuman Bldg.
Honolulu, Hawaii, U.S.A.

R. A. PROVINE
2000 Airport Way
Seattle, Washington

R. P. WILEY
1109 East Armour
Kansas City, Missouri

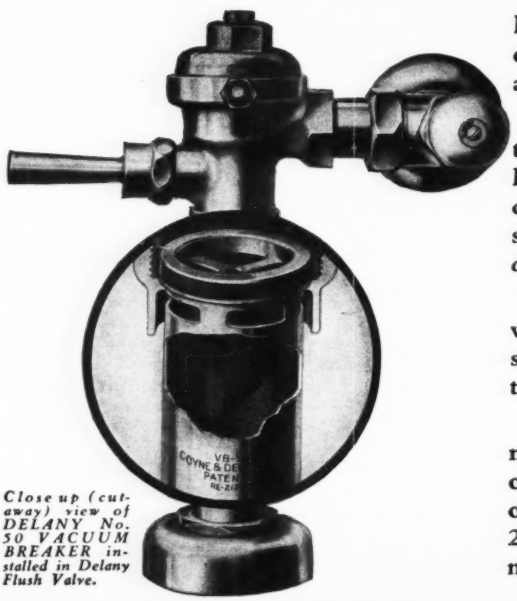
FRANK McNELLIS, JR.
P. O. Box 3763
Miami, Florida

M. J. HIRSCHFIELD
72 Nonantum Street
Newton, Massachusetts

TOMPKINS Plastic PLUMBING SPECIALTIES

SPECIAL ANNOUNCEMENT **A new product of tremendous importance will be announced at our suites at the Palmer House and Morrison Hotel, Chicago, April 29th and 30th during the Central Supply Meeting. See it—watch the tests—you will receive a friendly welcome and no obligations.**

In Defense of CIVILIAN HEALTH



Close up (cut-away) view of DELANY No. 50 VACUUM BREAKER installed in Delany Flush Valve.

Back syphonage, the cause of water contamination, is a source of epidemic, particularly in war time when such dangers are always more prevalent.

The Federal Government, to control this danger, specifies that every toilet fixture with a jet be equipped with approved Back-flow Preventer. In war industry, public buildings, and civilian sanitation installations and repairs as permitted, should be protected against back-syphonage *in defense of civilian health.*

The DELANY No. 50 VACUUM BREAKER is the one flush valve Back-flow Preventer that can successfully prevent back-syphonage, even though the unit may be maliciously sabotaged. It telltales breakdown—it's self policing.

The DELANY No. 50 VACUUM BREAKER is non-mechanical in operation and can be used with *any* flush-ometer made—new or replacement. Help protect the health of America's families, investigate the Delany No. 50—it's 20 years ahead of any flush valve vacuum breaker on the market.

SINCE 1879

Coyne & Delany Co.

BROOKLYN N.Y.

Ad No. VJ-8111

3 Ways Universal Can Help You Now!

DO YOUR PART FOR VICTORY – REMODEL-REPAIR-IMPROVE
Help to House War Workers
For Modern BATHROOMS
UNIVERSAL VITREOUS CHINA Plumbing Fixtures
For Modern KITCHENS

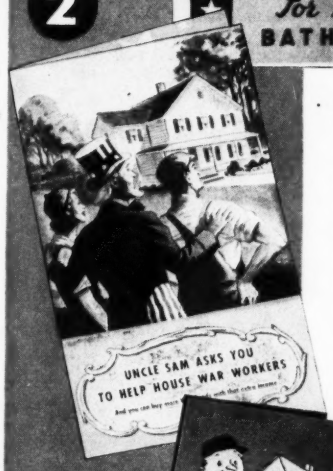
1

1. WINDOW DISPLAY
Ties up with conversion; 7 colors, three-dimensional, 30" high, 40" wide, 3" deep . . . a real sales getter.

2. FOLDER . . .
"Housing for Victory"
Beautifully printed and illustrated. Shows fixtures available for war conversion use, contains typical layouts for such alterations.

3. PAMPHLET . . .
"The House that Jack Re-built"
An amusing and instructive story on home conversion. A novel sales builder.

2



3

UNIVERSAL VITREOUS CHINA Plumbing Fixtures

There's a big market at your door!

The market for home conversion is a rare opportunity for dealers! There are no materials, there is no time nor labor for new construction! Hence, homes must be converted to house essential war workers in America's production areas. Industry and government authorities alike emphasize this as the immediate need of the moment!

Universal is prepared to help you get sales NOW through the use of attractive window displays, booklets and pamphlets. You can help Uncle Sam and help yourself by joining this campaign now — remember you'll sell other materials as well as V/C fixtures with the interest you create through these selling helps. Be sure to mail the coupon below, we'll do the rest.

How to Order

We are requesting a small fee for these attention-compelling helps. All are beautifully printed or lithographed. Please send check to cover cost when mailing coupon, or we will bill you later.

PRICES

1 — WINDOW DISPLAY — *single display free — additional $2.00 each.*
2 — "HOUSING FOR VICTORY" *Folder — $2.00 per hundred.*
3 — "THIS IS THE HOUSE THAT JACK RE-BUILT" *pamphlet, $1 per hundred.*

Universal Sanitary Mfg. Co.

PIONEERING EXCLUSIVELY IN V/C FIXTURES SINCE 1901

New Castle, Pa.

5

UNIVERSAL SANITARY MFG. CO.
NEW CASTLE, PA. DE

Please send us at once quantities of sales helps as follows:

.....Window Displays (one free — additional $2.00 each)
.....Folders with your Imprint (at $2.00 per 100)
.....Pamphlets with your Imprint (at $1.00 per 100)

☐ We enclose herewith ☐ check ☐ money-order — to cover cost.
☐ Please bill us later.

Imprint Name .....
Address .....

New multi-stage ejector pump for maximum efficiency from deeper wells.

To Meet the Urgent Need on Farms

F&W EJECTOR WATER SYSTEMS

Single stage ejector pump for economical installation on medium deep wells.

For shallow wells, this streamlined "Bullet" model is compact, simple, efficient.

SIMPLE in design and engineering, with fewer moving parts . . . ***Dependable*** in service, requiring a minimum of attention . . . ***Quiet*** and ***Efficient*** in operation . . . F & W Centrifugal Jet Pumps will help meet America's critical need for food, and release manpower for other vital farm jobs.

We have been authorized by WPB to manufacture a limited number of water systems in 1943 and these will be available under established regulations.

F & W Jet Pumps may be installed over well or offset in basement. Compact, simplified design eliminates many moving parts. No gears, no belts, no rods in well; no lubrication required because bearings are packed for permanent service. Complete line includes models to suit all needs, for shallow wells, medium deep and deep wells. All F & W deep well ejector pumps have automatic control valve which adjusts itself to varying well depths, assuring maximum efficiency over entire range.

We have greatly expanded our facilities for direct war production so, when victory is won, we shall be better prepared than ever to produce our complete line of farm and household pumps . . . also Star Zephyr windmills.

Help Finance Victory
Buy War Bonds and Stamps

FLINT & WALLING MFG. CO., INC.
In our 77th Year
476 OAK STREET, KENDALLVILLE, INDIANA

★

New Kohler Float Valve Answers Today's

BIG

PLUMBING NEED!

A NEW and interesting Kohler float valve to help you fill calls for needed repairs. Made largely of cast iron, to conserve scarce materials for war uses. Surfaces inside and out are coated with black baked plastic — rust-resistant and serviceable. Comes complete with lead refill tube and zinc-plated steel float rod. (Available on A-10 priority rating.) . . . Kohler offers a line of special "Win-the-War" fixtures and fittings, for war plants, war housing and other essential building. . . . Kohler Co. *Founded 1873.* Kohler, Wisconsin.

SIMPLE-EFFICIENT-SERVICEABLE

• Screw (A) adjusts the float rod, (B) regulates water volume and silences the action of filling the tank. . . . Vacuum breaker is of non-mechanical, atmospheric type with a 1-inch air gap between outlet (C) and overflow. . . . Seat is vitreous china — unaffected by water.

KOHLER OF KOHLER

PLANNED PLUMBING AND HEATING • ELECTRIC PLANTS

Thanks:

Domestic Engineering certainly straightens out the Washington situation as it pertains to my business.

A. W. M.,
San Francisco

Between Ourselves

Highlights . . . . and Slants . . . . on our Industry's Month

Postwar

The Heating, Piping and Air Conditioning Contractors National Assn. has opened activities in the postwar planning field with the appointment of a committee to study the subject.

The committee consists of Walter H. Oleson, Milwaukee, chairman; Thomas L. Eagan, Washington, D. C.; Harry M. Hart, Chicago; Walter Klie, Cleveland; Arthur F. Nass, Pittsburgh; Pres. George P. Nachman, Cleveland (ex officio), and Sec. Joseph C. Fitts, New York City (ex officio).

W. H. Oleson

The committee's first meeting was held in Cleveland recently, and a second meeting is planned tentatively for May.

Because of the war, the Heating, Piping and Air Conditioning Contractors National Assn. will hold no annual convention this year, according to a decision of the board of directors. This is the second time that the meeting has been omitted, the first being in 1917 and for a similar reason.

• • •

Allow Tile Pipe

Tile pipe, it has been announced, will be used for sewers inside the building in Chicago defense homes under the Federal Public Housing Administration, in spite of the fact that the Emergency Plumbing Standards require iron sewerage inside the building. This is permitted because of the scarcity of critical materials. However, under an agreement recently completed between the journeymen plumbers and the hod carriers union, the work of laying the tile pipe inside the building and to a point 5 feet outside the building will be recognized as the work of the journeymen plumber.

This was made known by Wm. E. Bergerson, administrator, FPHA, in response to a letter written by the Chicago association and the Chicago journeymen's local. Mr. Bergerson further assured them that the Emergency Plumbing Standards—with this exception—would be observed in all plumbing installations on federal housing jobs so that there will be no conflict in the future in the requirements for plumbing as covered by these standards.

• • •

Trend's the Thing

In a time of rapidly changing conditions, an insight into future trends is probably the most important single factor in carrying on a business—equal in importance, at least, to a knowledge of current regulations, markets and materials.

Given such an insight, the business man is able to plan for the future with a decided advantage over those less discerning or less well informed.

The trend's the thing . . . And to reflect in our editorial columns the trends of greatest significance to the plumbing and heating industry, your editors have a regular practice of talking with the people who make the trends.

In the past six months your editors have conferred, in question-and-answer sessions, with the following: Economics Stabilizer James Byrnes; WPB Chief Donald Nelson; WPB No. 2 man, Charles E. Wilson; WPB No. 3 man, J. A. Krug; Manpower Commissioner Paul McNutt; Price Administrator Prentiss Brown; President Roosevelt; General Somervell, chief of supply; General Campbell, chief of Ordnance; Captain Lovett, Navy director of public relations; Attorney General Biddle.

C. E. Wilson
(Domestic Engineering Photo)

Colonel Johnson, small business chief; Elmer Davis, director of Office of War Information; Milton Eisenhower, brother of General Eisenhower and associate director of OWI; Gardner Cowles, Jr., director of domestic relations, OWI; General Hershey, Selective Service head; William H. Davis, chairman of War Labor Board; Colonel Baxter, chief of materials redistribution; Oliver Lyttelton, British minister of production; Colonel Llewellyn, British minister in charge of procurement in U. S.

Rolf Nugent, originator of the "layaway plan"; Joel Dean, chief of fuel oil rationing; Ferdinand Eberstadt, inventor of CMP; Wm. L. Batt, WPB vice chairman; Leon Henderson, then OPA administrator; dozens of other leading Government officials, U. S. senators and representatives.

• • •

Stokers for Bombers

Birmingham's smoke abatement ordinance, enforcement of which was relaxed on account of the war, now is to be enforced for the same reason. The new objective is to clear the skies for the landing of big bombers at the plane modification plant of Betchel-McCone-Parsons recently located in the city.

It seems the city is threatened with the loss of a part of this plant unless

What's happened to SAM?

WELL . . . he's probably in the army now . . . as aren't we all in one sense or another? In the army, too, are hundreds of boilers, and with them the need for protection from low water . . . as symbolized by "Sam".

Naturally, devices that safeguard vital equipment play an essential part in the biggest job that American industry has ever tackled. So McDonnell products are in the army, too. Hundreds of them have been called upon to protect vital equipment in every branch of the armed forces, and in essential war industries.

These products include the standard devices that you know so well—McDonnell No. 47, No. 51 and No. 53 Boiler Feeders and No. 150 Low Water Cut-offs and Pump Controls. They also include flow switches and liquid level controls of all kinds in many effective variations worked out by our engineering department to meet the right-now needs of today's program.

So until Sam comes marching home, civilian requirements without preference ratings will have to depend on the thousands of McDonnell Water Level Controls that are already in service. That should be easy because they were built to last a lot longer than the Axis can last!

Some of you will help to keep McDonnell equipment clicking on the home front; others will take part in installing it in camps, airports and ships. Our job is to prove worthy of the privilege of supplying safety devices at a time when they mean so much . . . by building them to the highest standards, and on schedule.

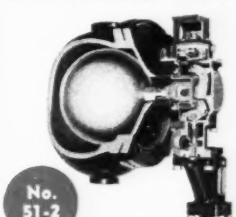
McDONNELL & MILLER, 1306 Wrigley Building, Chicago, Ill.

Doing One MM SAFETY CONTROLS *Thing Well*

McDONNELL

BOILER FEEDERS • LOW WATER CUT-OFFS
LIQUID LEVEL CONTROLS • RELIEF VALVES

McDonnell Boiler Water Level Controls are "Doing One Thing Well" on the war front and the industrial front.



The McDonnell No. 150 Pump Control has found new uses as a part of the machinery of war.

The McDonnell Flow Switch is typical of many products in the McDonnell line that have been adapted to solve new problems.

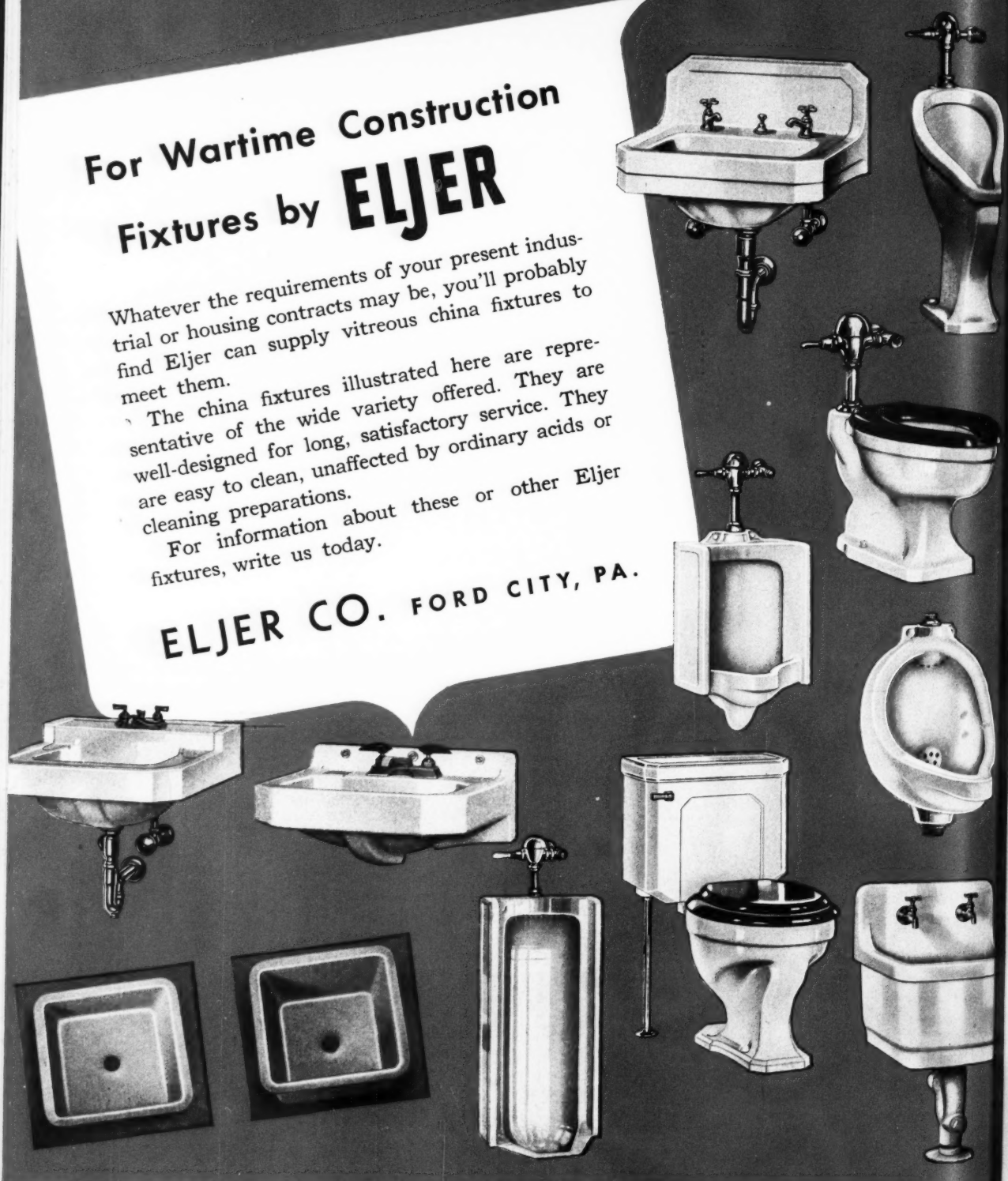
For Wartime Construction
Fixtures by ELJER

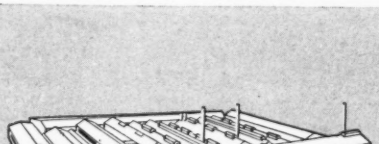
Whatever the requirements of your present industrial or housing contracts may be, you'll probably find Eljer can supply vitreous china fixtures to meet them.

The china fixtures illustrated here are representative of the wide variety offered. They are well-designed for long, satisfactory service. They are easy to clean, unaffected by ordinary acids or cleaning preparations.

For information about these or other Eljer fixtures, write us today.

ELJER CO. FORD CITY, PA.





Normally

PLUMBING FIXTURES ARE OUR EXCLUSIVE BUSINESS

. . . 15 acres of it!

Between Ourselves . . .

the smoke pall over the city which makes the landing of big bombers hazardous is eliminated. Already government officials have held up an appropriation for additional runways at the Municipal Airport for the same reason.

These developments have stung the civic pride of Birmingham, and now Commissioner of Public Improvements James A. Morgan announces the anti-smoke ordinance will be rigidly enforced and arrests made. Already railroads have been called on the carpet and plant owners and apartment house operators may be next.

Enforcement of the ordinance had been relaxed because of the inability to obtain stokers and other improved firing apparatus, so often required as a smoke preventative; also by the scarcity of smokeless fuels. But despite these obstacles, the skies must be cleared for the planes, said Commissioner Morgan, and he warns that arrests will be made for violations.

A recent survey by T. D. Lankford, smoke abatement inspector, showed that 60 per cent of the smoke comes from private homes and apartment houses. Even home owners who fire their plants in such a way as to cause smoke to belch forth will be called on the mat.

● ● ●

Water Systems

Following are excerpts from a radio address on the subject of maintaining farm water systems which was recently made by H. E. Carloss, sales manager, The Deming Company. While addressed to farmers, the message closely follows the advice which plumbing contractor-dealers are currently offering, and thus is of interest and value.

Your water system is one of the most essential utilities on your farm and its care should be your prime consideration, for the lack of water will seriously affect your activities.

There are too few complete new farm water systems available to meet the farm requirement for this year or for the emergency, but the government realizes the great need for water and permits the pump manufacturer to supply all the necessary repairs and replacements to keep the present installations in working order. It is therefore your duty to keep your water systems in first-class condition. There are many ways you can insure this continued service such as: keeping the electric motor oiled and in good running condition; seeing that the belt has proper tension; by keeping the entire system clean; frequent inspections; see that the pump is operating at full capacity. Do not let

H. E. Carloss

your system freeze. Call your dealer in the event full benefit is not being realized from your system.

Should you discover some noise in your frequent inspections, try to determine its cause and if unsuccessful, consult your dealer and take his advice as you would your doctor's advice. He is constantly and conscientiously trying

(Continued on Page 104)

Hall Advances

Washington, D. C., March 30 — John Hall who, as director of WPB construction and utilities, has had supervision over the Plumbing and Heating Division and other divisions, has been named deputy vice chairman for industry and operations. The promotion is part of the current general reorganization of top WPB management.

● ● ●

Rationing Meeting

Probable changes in the fuel oil rationing set-up were discussed by the Fuel Oil Industry Advisory Council and OPA rationing officials in a Washington meeting March 16 and 17.

Among members of the heating and plumbing industry present were: John Howatt, Chicago, past ASHVE president; E. N. McDonnell, McDonnell & Miller, Chicago; Howard C. Jones, Delco Appliance Div., General Motors Corporation; Joseph C. Fitts, secretary, Heating, Piping and Air Conditioning Contractors National Assn.; R. E. Ferry, general manager, Institute of Boiler & Radiator Manufacturers.

There's no shortage of pipelines snaking their way from the East Texas fields to the oil hungry East. But the percentage of the oil they carry which will be available for civilian consumption is still very uncertain. Only safe deduction is that oil will be short next winter and, second, that fuels of all kind must be conserved. Thus the opportunity for contractors to concentrate on fuel conservation work is extended and broadened. This picture shows "Big Inch," the 24-inch pipe line now going eastward from Indiana

TOOLS—AND LOTS OF THEM—

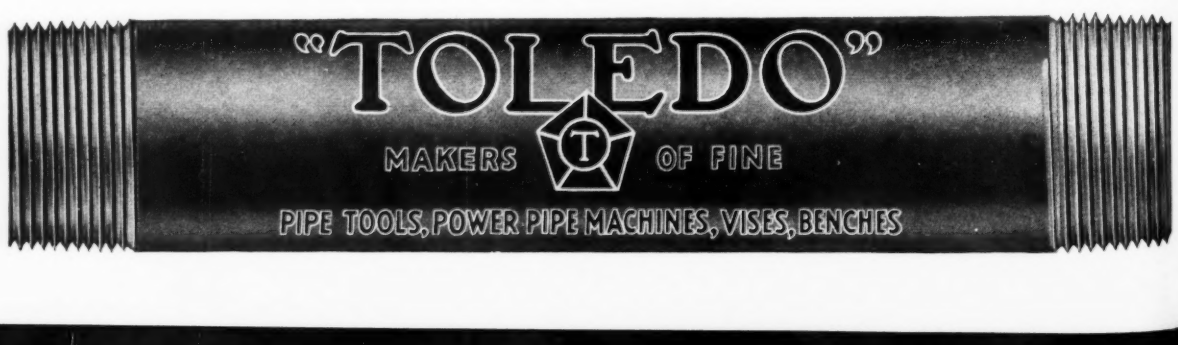
—are required for complete victory.

Thousands of "TOLEDOS" are being used by all branches of the Service and by construction companies erecting new war plants; by large industrial firms for maintenance work.

"TOLEDOS" are preferred because of their ease of operation, their speed in production and reliability.

"TOLEDO" cannot fill this large demand promptly and appreciate your patience in waiting until war orders are filled. It is hoped we will soon again be able to fill orders for civilian requirements as in the past.

THE TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO NEW YORK OFFICE, 502 No. 2 RECTOR STREET



Bad News for Axis . . .

Our Industry
April, 1943

Is Good News for Our Industry

ALTHOUGH this editorial is going to press on April 1 there is no fooling about the war production records being made and broken each month in the United States. When the information in this table below was released, the official who announced it expressed the hope that it would reach Germany and Japan. The table below is bad news for the Axis. But it is good news for us.

1. Let's look at some of the implications in the figures: The first point to be drawn is that no one has ever known or visualized the total productive capacity of this country. Even industry itself did not know its own strength. The figures show that American industrial power means victory in this war, and after the war, it can mean an abundance of peacetime goods.

2. The second point is that we are rapidly approaching the time when no further accumulation of many military items will be necessary. When the depots are stocked, we must produce only enough to keep full the supply lines to the fighting fronts. This can be accomplished without undue difficulty. There have been several indications of the rising efficiency of war material plants —one of the most significant being the cancellation of new factory construction projects.

3. The third implication is that approaching saturation points on most war items will inevitably result in what may be called "progressive reconversion" to the manufacture of other types of products mainly: (a) ships and planes, of which we will never have enough while the war lasts, and (b) the most important and the most essential civilian products. . . . Plumbing and heating *are* essential.

4. A fourth implication to be drawn from the figures is that the current record war production enables us to turn, more quickly than could have been anticipated, to the needs of the home front—now seen as serious, if not actually critical. WPB Chairman Donald Nelson sounded this call in his recent statement that materials would be allocated to "300 essential civilian items."

The Office of Civilian Supply is following suit and has started a survey (story on page 52) to determine the condition of plumbing and heating and other types of service establishments as regards materials and man-power.

Finally, a bill has been submitted in the United States Senate which, in establishing a more powerful civilian supply administration, seeks to preserve both civilian facilities *and* small business. In all, it is estimated that about 95 per cent of small business concerns are engaged in civilian supply.

In connection with "aid to small business," the plumbing and heating industry makes no selfish plea for its own protection or preservation. Practically all plumbing and heating contractors now have as much work as they can handle with available manpower.

While manpower is being discussed, however, it may be well to bring up one point concerning the relationship of our industry to this problem. . . . That is, that manpower is wasted in excessive and continual patching up of existing equipment. Generally speaking, it requires less labor to install a new ball cock than to remake the old one. Repeated service calls will use more man-hours than is required to manufacture *and* install a new item of equipment.

Our industry's plea is not for itself but for its customers . . . whose standard of sanitation, health and productivity is dependent upon modern plumbing and heating. Our industry would be perfectly satisfied to stand upon the "Declaration of Policy" of the Senate bill mentioned above (S. 885), which states:

"The Congress hereby declares that the total mobilization of all the Nation's resources is necessary for the successful prosecution of the war, that keeping the civilian population healthy and functioning effectively is essential to the successful prosecution of the war, and that it is the policy of the Nation to guarantee the production and distribution of the goods and services necessary to keep the civilian population healthy and functioning effectively."

Fortunately, all signs *do* indicate that the rising importance of the home front will increasingly be recognized. In this fact will lie the plumbing and heating industry's continued and increasing opportunity for outstanding, recognized wartime service.

Record Smashing Production

During the month of February, according to a public statement by Undersecretary of War, American industry produced:

Machine Guns	150,000
Sub-machine Guns	134,000
High Explosive Shells	1,932,000
Bombs of all sizes	419,000
Aircraft Cannons	8,000
Anti-aircraft Guns	2,000
Weapon-bearing Combat Vehicles	7,800
Small Arms Cartridges	1,244,000,000
Tanks	5,000
Army Trucks	28,000
Anti-tank Guns	2,000
Marching Shoes (pairs)	5,000,000

Spotlight on PLASTICS for Plumbing and Heating

By John C. Louer*

DURING World War I America brought forth a new synthetic organic chemical industry. It has been said that this industry was all we got out of World War I yet, if so, it was worth all the money it cost. We may disagree on the details but we can be very thankful for the tremendous contribution organic chemistry has made to our success in World War II—munitions, protective coatings, dyes, drugs including the sulfa compounds, synthetic rubber and plastics.

As one reviews the history of these developments he sees unfolding a succession of near miracles: buttons from skim milk; shower heads from cotton fibers too small for commercial spinning; glistening new bathtubs from dirty black coal tar; odorless, tasteless water pipe from salt water and crude oil; flush valves from sawdust and mill waste; shimmering fabrics from air, coal and water, these and many more—miracles of our new tomorrow already with us today.

The word "plastics" is like the word "glass" or the word "metals." It covers more than 30 distinct groups of materials within which are endless opportunities for variation to achieve specific properties. Of these, most are molded under heat and pressure; a few can be cold-cast like concrete; others can be extruded into rods, tubes and continuous strips of a given cross-section pattern. Sheets can be cut from blocks like veneer from a log or, in special cases, cast into thin foils by flowing liquid onto a large, highly polished wheel from which it is taken in continuous rolls.

Variety of Uses

In other forms the plastic resin as sheet or liquid can become the bonding agent for laminating paper, cloth, and wood veneer. Thus "plastics" is not a single specialty but a vast, widely varied group of industries. For simplicity we shall consider four groups of plastics.

The new flush ells, sink ells, shower heads, sink stoppers and most of the ball floats are of the molded plastics group. Two processes are in general use. In one the molding material is put directly in the mold and fused; in the other the heating and fusing take place outside and the fused result is forced into the mold as a semi-fluid paste. Each method is adapted to the molding material used and each involves pressures in terms of tons per square inch. The result in either case is a light, strong, non-corrosive, colorful casting that will stand up well for long periods of service.

Molded Plastics

Mechanically it is possible to mold most of the home water system elements—pipe fittings, valves, small pump parts, faucets, escutcheons, hardware for toilet seats, shower curtains, towel racks and related items. Some of these have already made their appearance, and others may be expected.

As we shall see in the other groups, a wide range of temperature resistance is possible by selecting special materials for each application. Some will perform equally well in boiling water or cold water, others must be kept in a temperature range below 150 to 175 F. Above those temperatures softening occurs and may cause failure of the part. When one considers the problem in the light of current thinking, that is, in terms of automatic temperature regulated water heaters and pump type circulation for hot water heating systems, he will find that the working range on plastics is not seriously out of line.

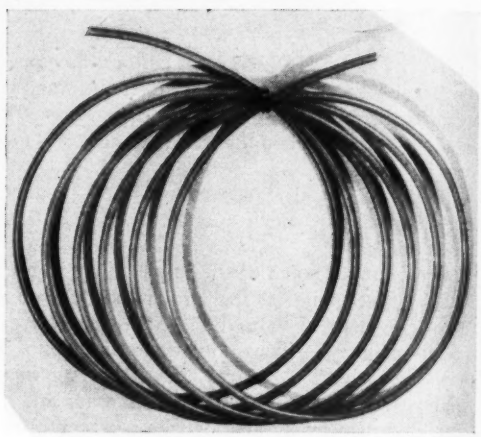
Extrusion is a special form of molding in which the material (in a soft fused state) is forced through a forming die of the cross-section shape desired onto a conveyor belt. It is a continuous process, the finished piece being coiled or cut to length at the end of the conveyor system. At the point where it comes from the die it is not unlike toothpaste as you squeeze it from your tube to the brush. Where a circular tube is desired, a ring or doughnut shape hole is used and a jet of air introduced at the center to give support to the soft walls during those first few moments before the material hardens to its rigid form.

Extruded Plastics

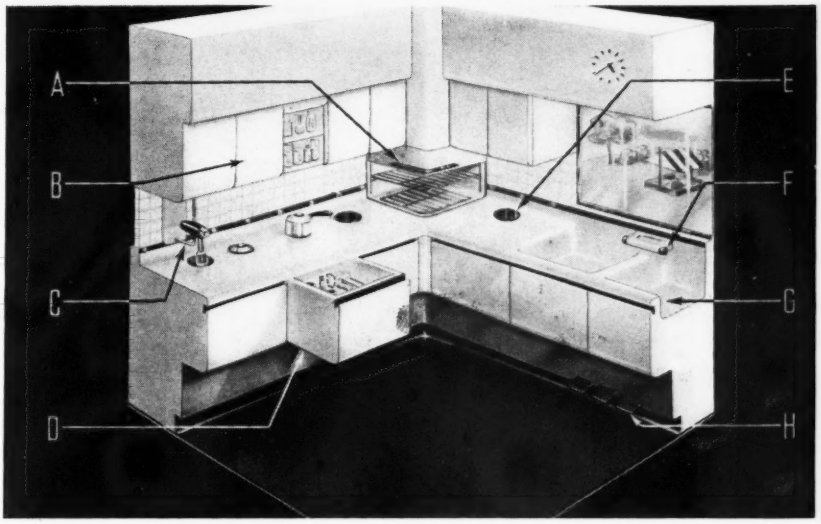
It looks simple — a machine loaded with powder producing endless coils of colorful translucent[1] tubing hour after hour. Suppose we consider one make of tubing in particular; others (there are several) may be studied when technical details are desired.

Today's Uses

One of the most practical applications of plastic to plumbing and heating thus far made has been in the form of tubing. Originally used for oil burner and humidifier lines, the tubing is now being used for cold water service in buildings. Photo below right shows plastic T's



*This article is a continuation of the Domestic Engineering series of studies designed to probe all phases of plumbing and heating subjects which will have a bearing on postwar conditions of our industry. Information is being sought and obtained from all available sources. Mr. Louer, author of this article, is connected with the engineering department of Elmer E. Mills Corporation. Future issues will describe the results of further studies.



Here's a designer's idea for a plastic kitchen of the future. Legend: A—Sliding plastic door of broiler-oven; slides upward to prevent heat loss. B—Walls, cabinet doors, work top and drawers of resin-bonded plywood. C—Appliances move into place above work top. D—Open-top refrigerator drawers. E—Electric plates and sunken cooking utensils. F—Plumbing fittings finished in plastics. G—Plastic sink. H—Foot operated water and drain controls

"Saran" tubing and fittings have been in production for a little more than a year. The fittings are molded, threads and all. Their greatest market during this first year has been among the airplane, automotive, and chemical industries, refrigeration and air conditioning also taking a good share. Experimental studies are now going on in two state universities, in the shops of the tube manufacturer and in the laboratories of one of the large plumbing manufacturers. From these several sources have come some very favorable reports even while product improvement is still being made.

Here are some of the highlights of this type tubing:

It is in the price range of brass and copper. Priorities are not a problem but raw materials are being used as fast as they can be produced. Already residence installations have been made and more will come as increasing supply makes material available for this purpose.

The tube comes in coils of handy lengths up to 100 ft. Fittings commonly recommended are of the flare type, although compression fittings have been tested in heavy wall samples. Plastic fittings are well suited to the plastic tube but metal can be used if preferred.

Plastic Tubing

The tube cuts with either a pocket knife or a hacksaw, bends as readily as BX electric cable, is very light in weight (more than 5 ft. to a lb. of the heaviest ¾ in. o.d.), flares with a small screw type tool that will slip easily into a man's pocket, can be fished up through a wall without previous forming; can be curved to fit connections at any angle without tools. Every fitting is like a union; mistakes in bending do not show and all curves are smooth.

No work bench, no complicated scheme of nipples and elbows on compound curves, slip-nose pliers instead of pipe wrenches—the customer satisfaction of metal pipes, the selling point of modern materials, and the installation advantage of no new skills to learn.

Can the tubing be used on steam lines? No . . . in any event the present product would soften and cause trouble. Tests run with boiling water indicate a certain safety factor, but the tubing is definitely not recommended for steam lines. In other words, if an automatic water heater regulator should fail and the temperature climb to boiling, the tube will not burst or melt but it might give an odor to the water. When normal temperature returned, the tube would become its old odorless self.

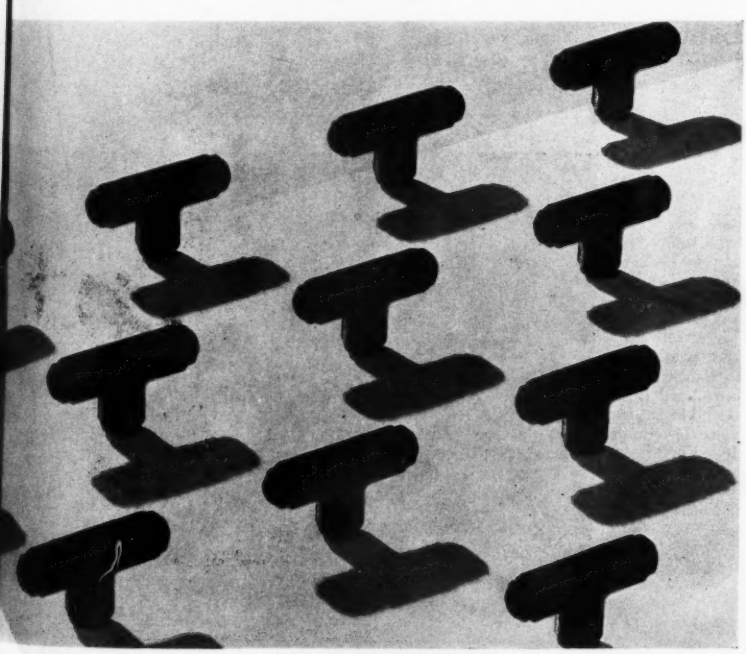
Insulating Qualities

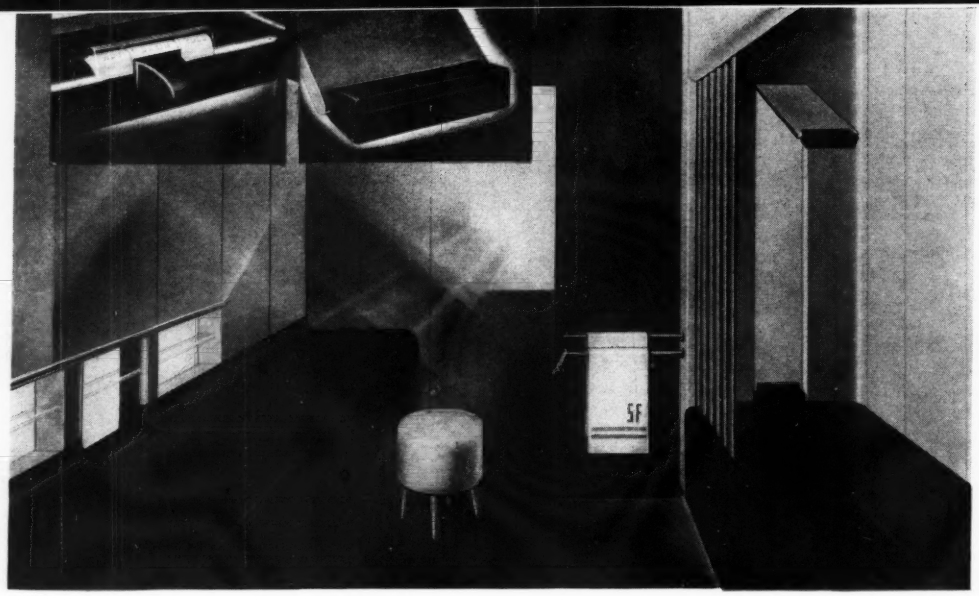
In our laboratory we have a section of plastic tubing in a live steam line used to bubble steam through a water tank. The tube discolors but stands up for weeks under this continuous abuse at temperatures of 50 degrees above the recommended limit. In this connection an interesting observation is made. One can place his hand safely on the plastic and only be aware of the heat within, whereas the same hand on the metal pipe one inch away on the same steam line will raise a blister at the first touch. The tubing is an excellent insulator for either heat or electricity—very good for piping hot water or refrigeration gas but quite worthless as a heating or cooling coil. It keeps the heat in—it does not transfer heat.

Even the farm family gets a break, for the new plastic water supply system may freeze without injury to the tube.

Laminated plastics differ from the other groups in two ways—the method of manufacture and the introduction of outside material into the finished structure.

The process consists of impregnating or interleaving sheets of paper, fabric or wood veneer with resin, stacking them between plates or rolling them on a steel core to build up successive lay-





You can make this bathroom any color you want because there isn't actually any such bathroom. It is the dream of industrial designer Carl Sundberg. The plastic shower fits into the wall when not in use, and is adjustable in height. Practically everything is conceived as being made of plastic. Note detail of fittings in upper left. This photo, and that of the kitchen, are supplied by Durez Plastics & Chemicals, Inc.

Plastics, proving utility in wartime, look forward to further expansion in plumbing and heating of postwar era

ers, then fusing the whole into one solid unit by heat and pressure. By the skillful selection of colors and materials, including sheets of plastics, very striking effects may be produced. Consider, for example, the ultra ultra bath of tomorrow with translucent wall panels covering concealed lights, pipe ducts and wireways. Panels that will add sheer luxury will be easily removed.

Already one manufacturer has built a 90-lb. bathtub using wood veneer with plastic bonding sheets. We may well see a day when such tubs will be streamlined and finished in any conceivable color or pattern from rare wood inlay work to the colors of the rainbow, clear, cloudy, or opaque, singly or in combination of colors. These tubs would be "warm" and comfortable to the touch and could be literally blended into the adjoining walls. The same is true of the lavatory, water closet, kitchen sink and laundry. Unlike paint or enamel there would be no surface to chip or wear off. A little wax polish and a few brisk sweeps of the cloth and its gleaming beauty would be restored, impervious to moisture, soaps and liquids.

As an alternative to heavy disposal pipes we may see a light weight laminated fiber pipe that can be easily sawn with a common hacksaw or trimmed with a sharp pocket knife. Joints will be sealed with a cold setting liquid mixed on the job in small quantities as simply as stirring sugar into your coffee. Such pipe already exists and has been very welcome in the oil fields.

The kitchen too will feel the gentle touch of plastics. In addition to the architectural elements, better plastic insulation may extend the deep freeze idea to the smaller home, such a unit being built into the multiple matching unit cabinet plan. Transparent panels so designed that contents could be seen or invisible, depending on the light, may be found on the front of the new refrigerator drawers eliminating our present day wasteful large door cabinets. Compressor units will be in an adjoining section or in the basement below.

One creative designer suggests laminated work space tops with pop-up holes for the juicer, mixer, toaster, etc., and cavities scattered about the work space in which to do cooking. He feels that with the new insulation materials, cooking need not be confined to a single concentrated stove but may be located at will, convenient to any activity. The oven is once more to rise to comfortable "no stoop" level with exhaust facilities for removing all cooking odors. The new air conditioning units will provide a constant supply of clean, filtered air properly warmed or cooled and humidified to order.

The last group (fabricated plastic) are parts made by forming, punching and machining stock pieces such as sheets, rods and tubes. While varied in scope from snap-in buttons, handles,

(Continued on Page 108)

[1]Can also be made clear or opaque.

Photo of plastic plumbing items already in production. Note plastic drain, plastic T's, other fittings and plastic tubing. This article outlines the properties and practicability of the tubing, and indicates probable future fields for plastics in plumbing and heating
(Modern Plastics Photo)

WATER SYSTEMS *and Beef and Apples . . . .*

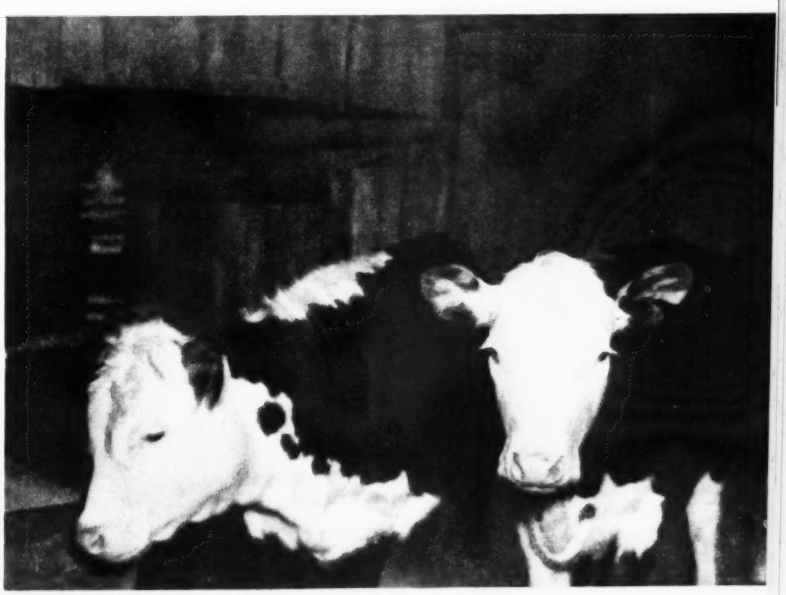
"Last year we sold and installed 100 water systems," said Mr. Price. "This year, thus far we have put in only four. The water system repair business has increased 25 per cent in the last six months. This indicates gradual deterioration of older water systems and points to a need for increased water systems quotas."

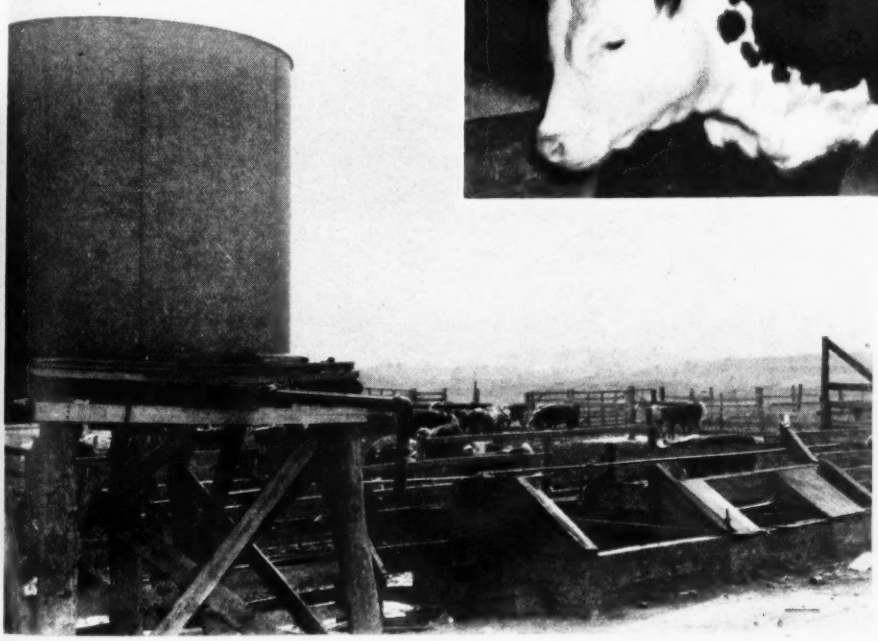
ONE of the most productive fruit regions of this country—southwestern Michigan—needs water systems and needs them badly if it is to produce this year's quota of apples, peaches, cherries and pears . . . fruits which were hard-hit in Florida. One dealer who carries a large load of responsibility toward the farmers in this section is Noble & Price Plumbing Co., Benton Harbor, Michigan.

Grover D. Price, manager of the firm, started the business thirty years ago in company with Mr. Noble, who died in 1929. "Our entire stock in trade," relates Mr. Price, "was a few coils of lead pipe, our tools and an old packing box which we used for a desk." You don't have to hear about the volume of business Noble & Price handles at the present time to realize how it has grown. Those few coils of pipe have given place to one of the most complete lines of stock carried by any contractor in the country.

A complete line of services as well as a complete stock make Noble & Price an important factor in the economy of its community. Plumbing, heating, refrigeration, industrial and domestic installations, repair work and a well-equipped sheet metal shop are coordinated by a sympathetic understanding of the community's wartime problems.

A water system, in Michigan as elsewhere, is the number one necessity for farmers. Many times it is impossible to repair and replace an old system on





Above are two of the white faces being fed for beef by one Michigan farmer. Feeder cattle are usually bought in the West and shipped to these feeding points. Left are shown more cattle, a tank reservoir and watering trough. The tanks are used to fill power sprayers for fruit trees

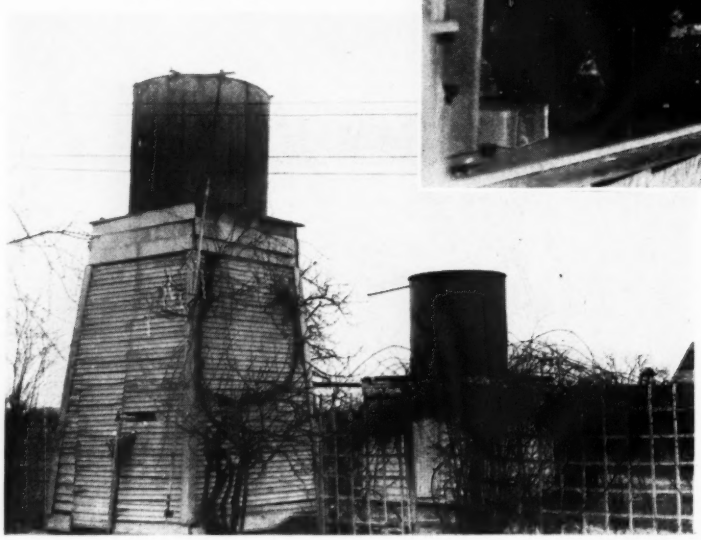
More water systems are needed to meet this year's food raising program. As an expedient, this contractor has instituted his own rebuilding plan which will help his fruit grower customers to feed the country and the world with beef and apples

the farmer's premises and many times it is equally impossible to get a new system. To meet this problem, Noble & Price has instituted a pump rebuilding plan. First, they decided, guided mainly by experience, that it was not a good idea to let the farmer make his own repairs unless the job was an exceedingly simple one. A representative of the company usually calls on the owner and looks the job over. If a minor repair, which can be made by the farmer, is involved, the contractor's representative sells the part or parts to the owner, thus saving labor time; if the job is more extensive and requires skilled attention but can still be repaired without removing the unit or interrupting service, the representative repairs it himself. The pump rebuilding plan is employed if the pump is beyond simple repair but is still basically sound.

The unit is removed and an already rebuilt unit of the same or greater capacity is installed to take over the job. The farmer is charged on the basis of the estimated time required to rebuild his original pump, plus installation charges, plus the increased capacity, if any, of the newly installed system. Noble & Price has several highly-skilled, factory-trained mechanics who handle a great share of the rebuilding. Some jobs, however, are returned to the factory.

One pump installation is shown at the left: this pump fills the tanks shown at the bottom of the page

One of the well-stocked small parts and repair parts sections of Noble & Price is shown at the right. Below are two tanks used on a Michigan fruit farm for filling power sprayers



The plan has a three-fold advantage: first, it gives the company's mechanics valuable experience; second, it bypasses the rationing system, thus speeding installations when water is badly needed and breakdown of the old system is imminent; third, its good-will building potentialities are immense.

"Whenever we send out a rebuilt pump," stated Mr. Price, "we give the new owner a one-year guarantee which we back with our reputation in the community. This pump rebuilding idea not

Action Expected

Reorganization of farm machinery production — called inadequate by most leaders who have studied the problem—is one of the tasks facing Chester Davis, the new food administrator.

The Truman Committee of the U. S. Senate recently advocated increased production of such machinery in its strongly-worded annual report. Farm water systems are classified in the farm machinery group.

only keeps the pumps circulating (no pun intended) but it helps maintain the country's stock of new water systems."

Two of the photographs below show a rebuilt pump and one being rebuilt.

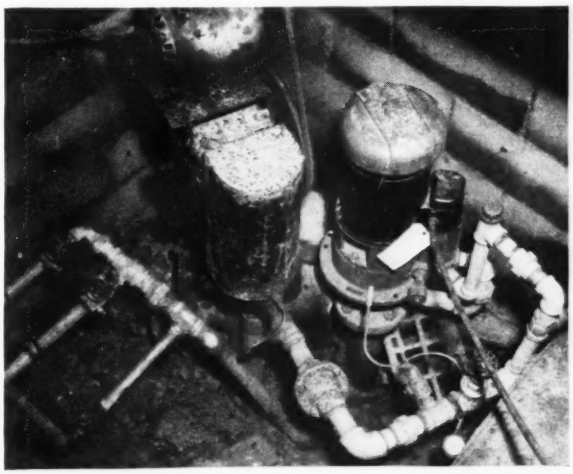
Many of the farmers in this section of Michigan have gone in for cattle feeding. This is usually carried on in addition to fruit raising inasmuch as a comparatively limited space is required and little additional equipment is necessary. Water systems are an example of the equipment usually on hand. All of the fruit growers in this section need running water. They need it for household uses, for chicken and hog raising, for dairy cattle (usually each fruit rancher has one dairy cow for family milk), and for home vegetable garden watering.

All these uses, however, are "luxuries." The greatest need for water systems is to supply water for fruit tree spraying. Their use here has been modified, in turn, by the extra-curricular activities of the fruit grower. In the daytime he needs his water system for home use, for cattle watering and other services. In the daytime, too, he needs water for fruit spraying. What to do? Most farmers have erected large tanks, usually of 1000 gal capacity or greater, which are filled by the water system in off-peak periods. Then, when the water demand is greatest, these tanks are used to fill the big power sprayers.

One farmer gave the tanks and the system a big pat on the back. "You know," he said, "before we got the water pump and the tanks it used to take us almost three times as long to do the spraying. And we usually didn't get it done in time either. We generally wound up with wormy fruit or with something else just as bad. Took a lot more men to do the spraying, too."

So, in Southern Michigan as in many other parts of the country, the water system, when and if available in greater quantities, may be one answer to the food shortage and manpower problem.

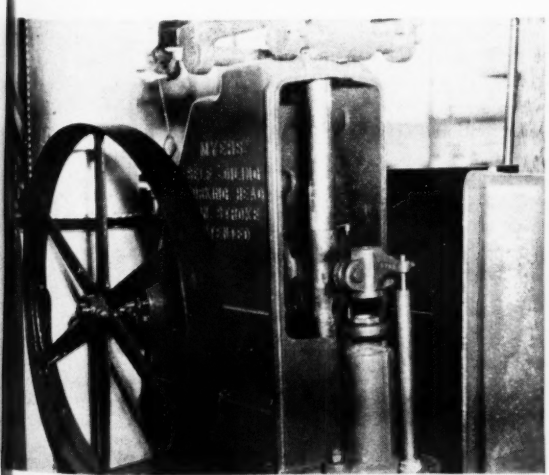
The photograph at the right shows a double pump installation. The six-inch pump (at the left in the picture) was unable to handle the load so the smaller unit was installed to serve in an auxiliary capacity

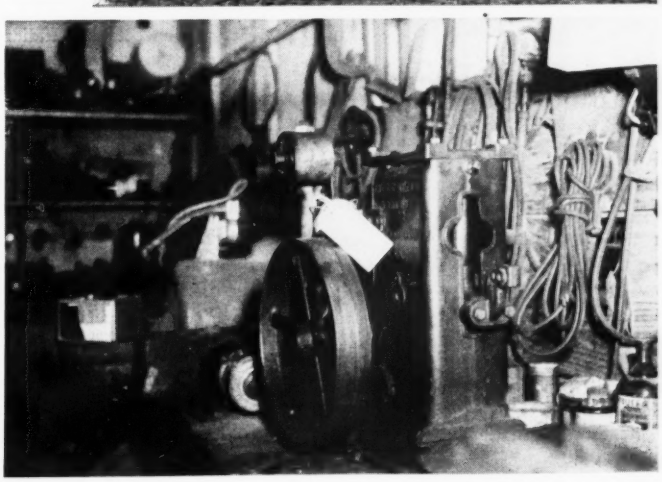


Typical of the orchards which reach for many Michigan miles is the one pictured in the second photograph. Power sprayers are used in these orchards and running water is used to fill the sprayers

Picture, below right, shows one corner of Noble & Price's water systems repair and rebuild department. All rebuilt pumps receive a 1-year guarantee from this contractor

At the left below is a rebuilt pump which has been placed in this dealer's showroom. Completely rebuilt, repainted and cleaned, it is at home with new fixtures





HONOR ROLL
of Industry's Contractors

(INFORMATION PASSED BY CENSOR)

PLUMBING and heating contractors seldom receive "E's" for their contributions to the war . . . yet they help to make war production records possible. Their contributions should be recognized and now will be.

The plumbing and heating contractor who provides facilities for war production is the "man behind the man behind the man behind the gun." The plumbing and heating contractor's service is the first step in the total process of building, manufacturing, transporting and fighting which finally results in victorious blows against the enemy. Each step in the total process is indispensable in modern war.

This "Honor Roll" is created to show the public, the Government and our industry itself that plumbing and heating are, in fact, indispensable to the war effort. The men whose installations are described in this first installment of the Honor Roll have not been selected on any particular basis—volume of work, or otherwise. Information from this first group, representative of the middlewest, were received first. Succeeding groups will be representative of other sections.

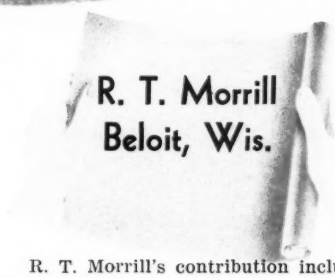
Following are contractors named to the "Honor Roll." A list of war-important jobs they are, or have been, engaged in, follows the contractor's name on the scroll.

How to Qualify for Honor Roll

If you now have jobs, or have handled jobs, important to the conduct of the war, you are eligible for this "Honor Roll." Here's what to do: Send us a list of your installations including information of the type given in this article (neither the exact name of plant or military establishment nor the exact location need be given). And include with the list a copy of a recent photograph of yourself.—Ed.

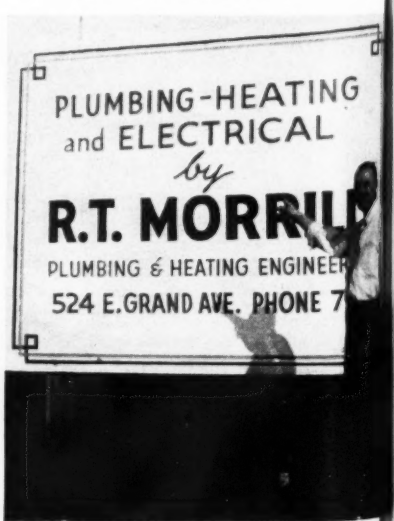
Ordnance plant in Illinois—heating, ventilating, process piping and plumbing
General hospital in Iowa—heating, ventilating and plumbing in 50 hospital buildings
Radio school in Wisconsin—heating and ventilating
Aircraft assembly plant in Illinois—heating, ventilating, process piping and plumbing
Steel plant in Minnesota—blast furnaces and power house piping
Manufacturing plant in Illinois—plumbing
Naval training station—heating, steam distribution and plumbing
Instrument plant in Illinois—plumbing

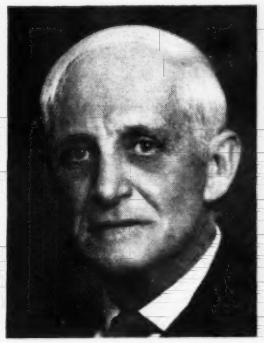
Hayes Bros. have credit for the following:
Defense plant in Indiana—plumbing, heating, air conditioning and sprinklers
Ordnance plant in Indiana—heating, ventilating, plumbing, sanitary sewers, water distribution, steam distribution and process piping
Two defense plants in Indiana—plumbing, heating, special piping, automatic sprinkler system
Naval depot in Indiana—air conditioning system
Defense plant in Indiana—plumbing, heating, process piping
Ordnance plant in Indiana—plumbing, heating, process piping
Naval ordnance plant in Indiana—heating, air conditioning, process piping, roof cooling systems



R. T. Morrill's contribution includes:
Manufacturing plant in Wisconsin—plumbing and heating
Defense housing projects in Wisconsin (237 houses)—plumbing and heating

R. T. Morrill beside sign of the type he places on larger jobs





Above, left to right: H. P. Reger, Chicago; Joseph G. Hayes, Indianapolis; Walter Klie (Smith & Oby), Cleveland. These three men are heads of some of the organizations honored on these pages. See the type box on facing page for information on how you can qualify for honor roll

Smith & Oby Cleveland

Smith & Oby jobs include:

Ordnance plant in Ohio—plumbing, heating, ventilating, boiler plants, sewage disposal plants, water works, steam and air distribution, and process piping

Hangar building in Ohio—plumbing and heating

Aircraft manufacturing plant in Ohio—boiler plant, refrigeration, process piping

Manufacturing plant (tools, switches, etc.) in Ohio—plumbing and heating

Drill manufacturing plant in Illinois—plumbing (80 fixtures), piping work and remodeling

John F. Ahern Fond du Lac, Wis.

John F. Ahren reports:

Army camp in Wisconsin—gasoline dispensing system

Radio school in Wisconsin—plumbing (72 lavatories in buildings, six in schools and 19 miscellaneous), building and motor fuel dispensing system

War housing project in Wisconsin—plumbing (750 dwelling units)

War housing project in Illinois—plumbing (500 dwelling units)

Two war housing projects in Wisconsin—plumbing (1250 dwelling units)

Machine tool plant in Wisconsin—plumbing and heating

Diesel engine plant in Wisconsin—plumbing

H. J. Osterfeld Dayton, Ohio

H. J. Osterfeld's record covers following:

Chemical plant in Ohio—plumbing and heating (132 plumbing fixtures, 3 HP boilers, 6½ miles overhead distribution mains)

Manufacturing plant in Ohio—plumbing (148 plumbing fixtures, 10 in. supply and return wells)

Manufacturing plant in Ohio—plumbing, gas unit heating and air conditioning

Air field in Ohio—plumbing, heating and air conditioning

Aeromedical laboratory in Ohio—plumbing and chemical laboratory fixtures (106 units)

Barracks buildings in Ohio—plumbing and heating (308 plumbing fixtures, 22 gas-fired hot water radiator heating systems)

Engine repair building at air field in Ohio—plumbing and public utilities (144 plumbing fixtures)

Shop Exp. building at air field in Ohio—plumbing and heating (116 plumbing units, central distribution heating system)

Buildings at two air fields and a modification center in Ohio—37 uncompleted plumbing and heating jobs

Fettes, Love & Sieben, Chicago

The above company lists the following jobs:

Naval station in Illinois—plumbing (480 fixtures)

Manufacturing plant in Illinois—remodeling (240 fixtures)

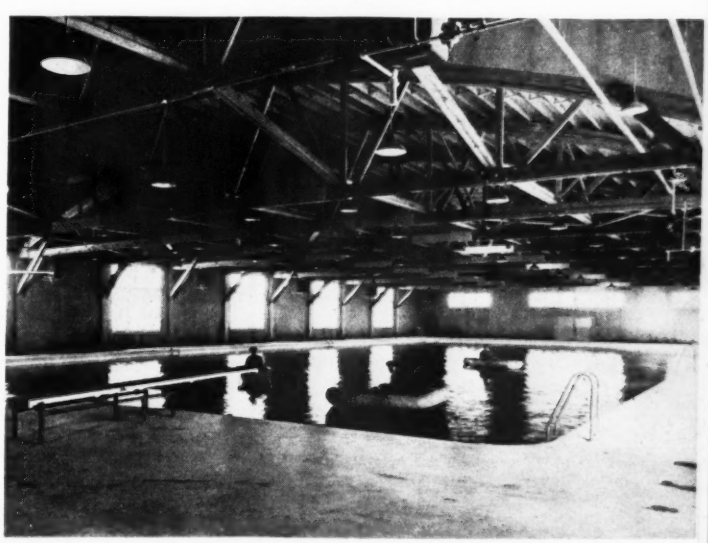
Defense plant in Illinois—plumbing (2300 fixtures in 18 buildings), water mains and sewers

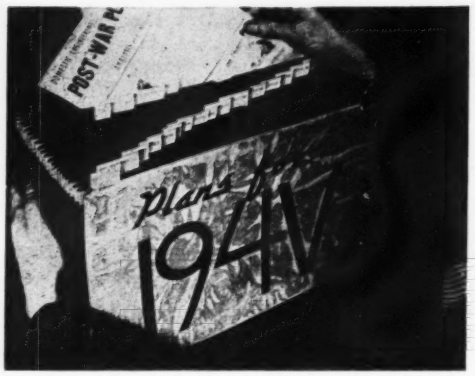
Defense plant in Illinois—remodeling (140 fixtures)

Manufacturing plant in Illinois—plumbing (170 fixtures, new building and remodeling)

Industrial plant in Illinois—plumbing (40 fixtures, new building and remodeling)

Swimming pool, big enough for boating, at Great Lakes Naval Training Station. Such jobs at this station were handled by companies in this Honor Roll





Read this— in connection with the article on "postwar potential", to be found on next spread

Sixteen Million Major

SIXTEEN million major plumbing jobs (water system, flush toilet or bath) are needed for a uniformly decent standard of sanitary living in the United States.

This is a conservative estimate based upon figures from the Sixteenth Census (1940). A digest of the facts on plumbing, from this Census, was released March 24. Among other points, the study shows that:

Three of every ten homes in the nation (eight of every ten in rural areas) have no running water.

Four of every ten American homes have no private flush toilet.

Four of ten have no private bathtub or shower.

The facts revealed are of much more than sociological significance to our industry. In the first place, they indicate that a vast amount of repair work *must be done* while the war is in progress. In the second place, they throw light on the possible extent of the remodeling market which will be present after the war is over. It is recommended that the contractor study these regional and national data in relation to the feature "Predict Postwar Potential" on Page 55 of this issue.

A logical starting place in considering the future repair market is the age of the dwellings concerned. The Census reveals that the average age of the American dwelling structure is 25 years. Farm dwellings average older than city dwellings—28 years as against 26 years; rural nonfarm dwellings, averaging 20 years, bring the average down to the 25-year figure. The following table breaks these statistics down by regions:

Northern states—Average age 30 years	
Farm dwellings	38
Urban dwellings	29
Rural nonfarm dwellings	26½
Southern states—Average age 21 years	
Farm dwellings	23½
Urban dwellings	21½
Rural nonfarm dwellings	17
Western states—Average age 18.3 years	
Farm dwellings	20
Urban dwellings	19½
Rural nonfarm dwellings	14

The "age-of-dwellings" figures are as significant to new building prospects as to remodeling and repair. Experts vary on construction following the war; estimates run all the way from one-half million to two million annually and more. The following table (on the facing page) shows home building for recent decades:

Survey to Reveal Condition of Industry

It is no secret to our industry that inadequate material supplies are threatening the continued operation of essential plumbing and heating facilities in the homes of the nation. Other and less-essential service industries now face a similar condition. Deterioration of facilities, with accompanying economic dislocation in the small business structure, has progressed to a point where the situation is being recognized by the Government.

The first action by Government agencies to counteract a threatened breakdown on the home front is being taken by the Office of Civilian Supply, which is starting a survey of service trades to determine their essential needs from the standpoint of manpower and material requirements.

The first step in this survey, which will be expanded in the near future to cover all critical areas, will be taken in Connecticut where, with the support of Senator Francis Maloney, the cities of Bridgeport, Hartford, Waterbury and New Britain will be covered.

Plumbing and heating establishments will be surveyed in the nation-wide study along with such other groups as hotels, tire repair and retreading shops, medical and surgical supply houses, and machinery and equipment repair.

"We then propose," said Joseph L. Weiner, director of Office of Civilian Supply, in a letter to Senator Maloney, "to see that full consideration is given to these requirements when allocations are made among military and civilian needs, as well as among competing civilian needs."

10,723,928 homes with no running water

3,626,171 water, no private toilet

1,502,779 private toilet, no private bath

15,852,878 plus other unreported jobs

Plumbing Jobs Wanted!

Decade	Total	Annual Average
1930-39	5,528,096	552,810
1920-29	8,515,264	851,526
1910-19	6,445,480	644,580
1900-09	6,116,557	611,656
1890-99	3,563,847	356,384
1880-89	1,952,257	195,226

Plumbing and radiator heating are impossible without running water, and in this connection the fact that 82.2 per cent of farm homes do not have this blessing proves that there is a tremendous future potential for water systems and the associated plumbing and heating conveniences. Following is a breakdown of the figures on running water in farm dwellings:

Total homes	7,642,281
Reporting on water supply	7,547,321
Running water in dwelling	1,340,025
Hand pump in dwelling	848,632
Running water within 50 ft.	334,753
Other water supply in 50 ft.	3,905,113
No water supply within 50 ft.	1,118,798
Not reporting on this question	94,960

Following are the figures on flush toilets for the nation as a whole:

Reporting on toilet facilities	36,769,610
Private w.c. in structure	21,966,878
Shared toilet in structure	1,826,962
Nonflush toilet in structure	130,977
Outside toilet or privy	11,826,429
No toilet or privy	1,018,364
Not reporting on facilities	555,860

Following are the figures on bathtubs and showers:

Reporting on bathtub or shower	36,649,481
Exclusive use	20,606,481
Shared	1,722,576
None	14,320,519
Not reporting this question	675,989

Washington News Developments....

Restriction Relaxed

Washington, D. C., March 10—Advance approval of limited utility connections for construction or remodeling projects permitted under L-41 is granted in Supplemental Utilities Order U-1-d just issued by WPB.

To qualify for such automatic approval, material for an electric, gas, or water connection must cost less than $1500.00 in case of underground connection or $500.00 in the case of other construction.

In addition, in the case of an industrial or commercial consumer, not more than 60 lb of copper may be used in an electrical connection or 250 lb of iron and steel for gas or water service.

In the case of domestic consumers, the material cost limitation is the same as industrial or commercial while the amount of material must be held within the limits established by the Housing Utility Standards issued by WPB.

Previously such connections were granted upon individual application to WPB. The change was made because administration of L-41, formerly centered in Washington and New York, has now been placed on a regional basis.

Price Order Dead

Washington, D. C., March 22—OPA Administrator Prentiss M. Brown announced today that price ceilings will be removed from construction work, although price control will continue to be exercised over maintenance and repairs.

This will be done through revocation of Maximum Price Regulation 251, and modifications of other orders providing ceilings for such maintenance and repair work as plumbing and heating.

The necessity for a specific regulation over the entire construction field has been eliminated almost completely by the influence of wartime limitations on civilian construction, Mr. Brown stated. However, certain construction activities which are factors in the preservation of rent ceilings (such as maintenance and repair) will remain under control of other price measures.

Also remaining under control will be the sale of materials on an installed basis "where the items are sold on a unit basis." Materials such as pipe, and mechanical equipment such as water heaters and boilers, when sold on an installed unit basis, will remain under control.

Water Systems

Washington, D. C., March 25.—Electric service for water systems and other production equipment is brought within reach of smaller farms under an amendment to Utilities Order U-1-c announced today by the Office of War Utilities.

(Continued on Page 108)

RECAP --What Industry Thinks on Postwar Heating

Right: Meeting of 45 heating experts, reported last month, which "set the ball rolling" on this discussion of postwar heating. Far right: Questionnaire published in last month's issue, results of which are digested here

DOMESTIC ENGINEERING'S

POST-WAR PLANNING

for the

Plumbing, Heating and Air Conditioning Industry

WHAT DO YOU THINK ABOUT FUTURE OF HEATING?

Fill in your answers to the questions below. Tear out at the broken line. Mail to Postwar Planning Department, DOMESTIC ENGINEERING, 1900 Prairie Ave., Chicago. Important: Place a check or asterisk after any topic on which you would like to have additional information.

1. Do you believe boilers should be designed for a single fuel (for greatest efficiency) or for two or more fuels? .....
2. What should be the most important developments in controls? .....
3. Do you foresee a continued trend toward smaller boilers and piping? .....
4. Would you like to see "package units" of boiler and radiators? .....
5. Do you expect rapid growth of panel heating? ..... If so, will panels be mainly in floor, walls or ceiling? .....
6. Do you expect electric heating to increase in importance? .....
7. What refinement or improvement would you most like to see in boilers? .....
   Oil burners? .....
   Stokers? .....
   Radiation? .....
   Gas burners? .....
8. Do you expect to install central refrigeration systems in residences for house cooling, food storage and quick freezing? .....

Name ..... Address .....

RETURNS from last month's questionnaire on eight questions of postwar heating revealed some interesting viewpoints and suggestions. One contractor, for example, recommended that "all small house heating boilers be made wide enough to accommodate the proper size stoker retort."

This review will merely hit a few of the high spots in the survey, inasmuch as most of the viewpoints will be incorporated in later feature articles.

Almost all who answered the questionnaire expected a rapid growth in panel heating after the war. There was very little interest in the use of ceilings for heating panels, most contractors favoring floors. Some specified floors *and* walls. One recommended removable heating panels in walls and, in one story houses, heating panels in the floor.

Most of the replies foresaw a continued trend toward smaller boilers and piping in line with greater use of insulation. While "smaller radiators" were not suggested in the questionnaire, it is apparent from the responses that two divergent trends may be foreseen—one in the direction of larger heating surfaces (panel type) and the other in the direction of even smaller and less conspicuous radiators than now commonly used.

Most readers replying omitted answering question No. 1 as to whether boilers should be designed for a single fuel or for two or more fuels. The influence of the current coal and oil situation can be seen here. Ease of cleaning was one improvement suggested.

A few replies indicated interest in electric heating, some qualifying their answers by predicting greater use of electric heating where current is relatively cheap.

Requests for "package" boiler and radiator heating were quite numerous.

Letters and Ideas on This Topic

One of the most complete letters in response to the questionnaire was received from E. N. McDonnell, McDonnell & Miller, Chicago, who was present at the recent meeting sponsored by the Research Committee of the Institute of Boiler and Radiator Manufacturers. His article follows:

I SUSPECT that when the typical business man allows his mind to roam along the avenue of postwar planning, he finds himself torn between two conflicting emotions. Working on him from one side is the time honored superstition that it's bad business to count unhatched chickens or celebrate un-won victories. But prodding him from the other side is the thought that refusal to make postwar plans is a confession of weak faith in the ability of U. S. arms to carve out the victory.

So plan we must, meantime making particularly sure that our main and immediate efforts are concentrated on the victorious objective, without which the postwar plans would be simply "the stuff that dreams are made of."

It would be easy to plan postwar heating if we knew what the postwar world will be like. But no one knows that, and today the facts on which to base

a prophecy are more scrambled than they ever were before. About the only thing that we are all sure of is that people will want heat in the postwar period just as they always have in the past. It's one thing we warm-blooded mortals can't get along without. What form it will take, how it will affect different groups in the heating industry, is a problem worthy of far more profound study than I am giving it here. My only purpose is to hit just a few high spots that may suggest some constructive thinking which will ultimately take on some worthwhile pattern.

Forgetting for the time being the competition between kinds of heating, there are a few safe guesses that can be made right at the start as to the postwar trend of all space heating, particularly in smaller dwellings. I don't think there is any question, for instance, that even the most modest home will have automatic heat. I also expect homes—clear down to the simplest—to be given ever-better insulation, permitting ever-smaller heating plants. As to air conditioning, I think we have merely scratched the surface of this great and coming field. In the postwar U. S. I think the condition of air in living quarters, and its effect on the health of the occupants, will be a major study and will develop into a major business.

People have already had a taste, here and there, of something better in heating. They know that it *is* possible to have clean, wholesome air; proper humidity the whole year through; smooth, even, pervading heat every waking hour; perhaps cooling and dehumidifying in the hot days of summer. A heating and air conditioning condition as ideal as this may not be exactly what the authors of the Atlantic Charter had in mind when they set up "freedom from want" as one of the Four Freedoms. Nevertheless, it's been my ob-

(Continued on Page 82)

Tank Heater Idea Clicks

Last month's feature on the use of coal-fired tank heaters as boosters in oil-fired systems resulted in considerable response from our industry.

Readers will be interested in the report on page 70 which indicates that the idea is finding favor with the Office of Civilian Supply. This agency is influential because of its jurisdiction over Class B products (including plumbing and heating) in the Controlled Materials Plan.

From Fahnestock

Prof. M. K. Fahnestock, University of Illinois, was one of those present at the I-B-R meeting. Following is an extension of his remarks made for Domestic Engineering readers:

In general, many offices and most hospitals have large ventilating systems with efficient filters which provide a cleaner environment than the heating plant in the average home. The public demands clean food, yet, while the intake of air is about ten times greater by weight than the intake of food, there is no general protection afforded to health by providing clean and sterile air.

Small use has been made of the known relationship between environment temperatures and humidity and the temperature of the various parts of the human body. One or two large medical institutions are now using this knowledge in helping to diagnose circulatory diseases. The surface is only scratched in the knowledge of the effect of environment on humans and what is known encourages the belief that in the future variable and controlled atmospheric factors such as temperature, humidity, pressure and

(Continued on Page 104)

Predict Postwar Potential

HOW may a plumbing and heating contractor start his own postwar planning?...Here are a few suggestions:

1. Take your volume of 1940 (last peace-time year) as a conservative estimate of your possible business for the first year after victory. Then conduct an inventory of your business to see if you can obtain quickly the components needed to carry a volume of that size.

The inventory could include such items as working capital, journeymen and laborers, showroom floor space, shop space and tools, trucks.

2. Consider population changes in the community you serve which might increase your potential for 194V. If the population has not decreased thus far, you can count on an increased number of prospects when and as men are released from the armed services. If competing shops in your community have closed, this means that you will have a still larger group of customers and prospects.

If the population in the area you serve increases 20 per cent from the prewar total, it would be logical to plan on a 20 per cent increase in facilities and personnel.

3. Consider increased purchasing power in the community. It is estimated (R. G. Creviston) that the nation as a whole will have a total purchasing power of 134 billion dollars when the war is over. Consider whether war plants in the community will change over to civilian manufacture at war's end, thus continuing the flow of purchasing power in the locality.

Increased local purchasing power may indicate that a move to a better location, or the setting up of a showroom, is advisable. It might suggest expansion of line to include items formerly handled by now-defunct appliance dealers.

4. Consider the condition of existing plumbing and heating in the homes of the neighborhood in connection with the purchasing power estimates. For a tie-in on this idea, read the article on Page 52 of this issue which shows the condition of plumbing nationally.

5. Keep records of inquiries and prospects who ask about work, or want merchandise, which cannot be furnished at this time. This will give an idea as to the number of customers who should be contacted immediately when materials are available.

DOLAN *and* OLSON

All about digging a well, Broadway Brown, the Ladies Aid, writing a song, smorgasbord, fishing through the ice, and the difference between a lavatory and a w. c.

THERE wasn't much doing around the shop when I got thru on that defense job, so I worked around the cottage for a while, just getting it ready for winter living, because it had been a summer cottage and it sure wasn't equipped for a Minnesota winter.

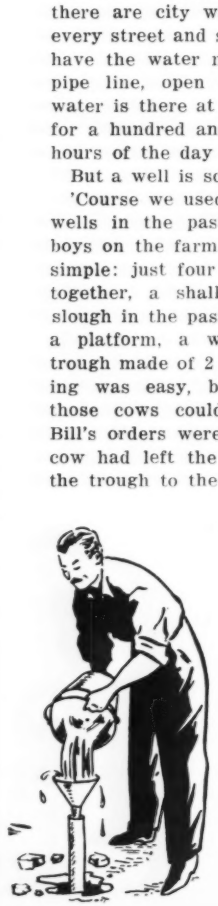
Among other things we had to have a well because we had been getting water from a neighbor and the supply line was just below the surface of the ground and I knew that it would freeze solid with the first cold days and nights.

You know, we city fellows sort of take water for granted. We know that there are city water mains in almost every street and so we dig a few holes, have the water main tapped, install a pipe line, open the valves, and the water is there at the turn of the wrist for a hundred and one purposes at all hours of the day and night.

But a well is something else again.

'Course we used to dig some shallow wells in the pastures when we were boys on the farm, but those were very simple: just four 1 by 6 boards nailed together, a shallow hole close to a slough in the pasture, a few boards for a platform, a wooden pump, and a trough made of 2 by 12 planks. Pumping was easy, but tedious, and how those cows could drink. And Uncle Bill's orders were to pump until every cow had left the trough and then fill the trough to the top and leave it.

Talked to some of the neighbors and got some first hand pointers on what to do and what not to do. Then bought an electric pumping outfit, some 1¼ in. galvanized iron pipe cut in 5 ft lengths, some long drive couplings, and a well point. Borrowed a "driver" and started the job.



Technically, this isn't exactly the way it was, but you get the general idea

Broadway Jones tries pantomime, because he can't get a word in edgewise

You can look in a window and see a candy maker or a doughnut maker at work, and it looks easy. You have seen your mother make and bake bread times without number, but wait until you try it yourself. Same thing with driving a well.

Cut a hole in the cement floor. Rubbed the well point thoroughly with brown laundry soap and started it down into the ground. Pounded it down to the floor line and then screwed on a coupling and length of pipe with a "square-end" coupling on top, raised the driver (it weighed about 75 pounds and had a guide of 1 in. pipe which projected down into the 1¼ in. pipe) and from then on all that I had to do was to raise that driver and then drop it and every time it dropped the well point and pipe went a little closer to China.

But that driver kept getting heavier and heavier.

Finally got down about 25 ft below the basement floor and dropped a plumb bob down in the pipe line to see if there was any water and how much. It was there all right. About 5 ft deep. The next step was to put a funnel on the top end of the pipe and into that I poured water. First slowly and then as much as would go thru the end of the funnel and that water passed out of sight as fast as I poured it in, so I knew then that I had a well.

The rest of the installation was routine, so with that job and a lot of others out of the way, I dropped into the shop to see what had been and was happening.

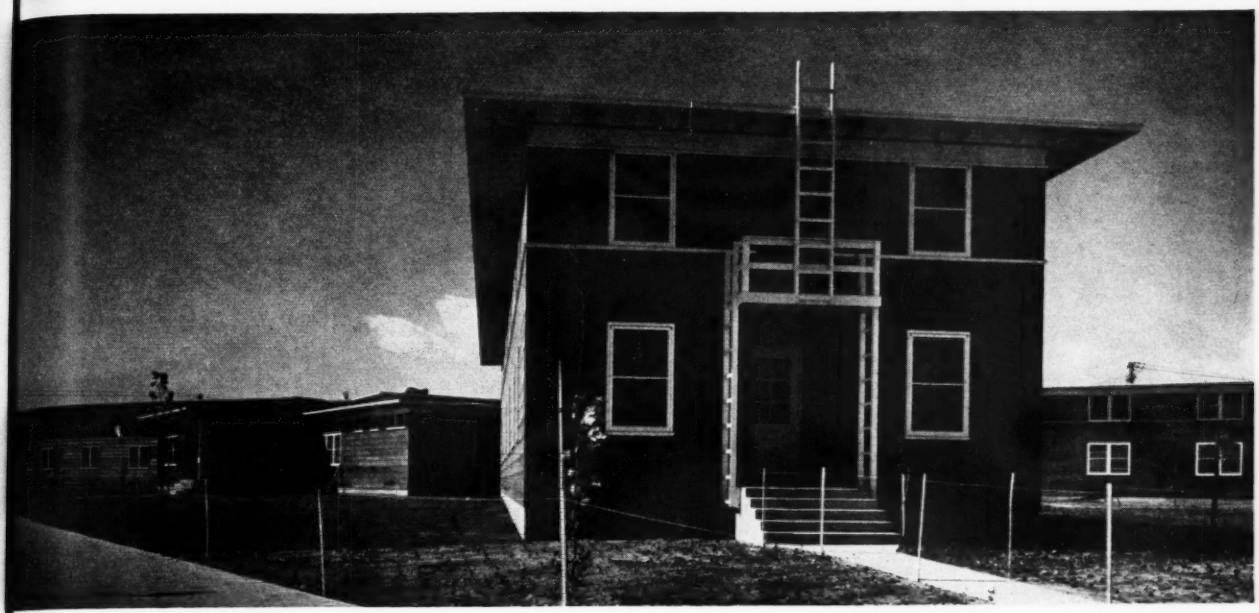
Got there just in time to get one side of a telephone conversation and it wasn't Hank, but another chap and he was sure getting an earful.

Hank had needed some one to stay in the office and with most of the young chaps either in the service, or waiting for the call, or else working in defense plants for plenty of jack, it just wasn't in the books to hire a young chap. So Hank had noticed that one of the boys with whom he used to go to school seemed to have a little spare time on his hands and so Hank had him on the job.

This chap is a retired actor. Has played before audiences of all sizes in every city in the U. S. and here he is on the office end of our telephone, an actor in real life. "Broadway" Brown

(Continued on Page 83)

What, a low-tank lavatory?



A Study in Substitutes

Use of wartime materials in wartime housing projects is emphasized in this large Pacific coast dormitory development for ship builders

THE use of substitute materials for strategic materials in the construction of the plumbing and heating installations in the Wilmington Hall and Wilmington Hall Annex housing projects for war plant workers at Wilmington in the Los Angeles Harbor District has been accomplished with much success and on a scale that has attracted the attention of construction and engineering circles.

The project is in two units: Wilmington Hall, for housing 2,000 men; and Wilmington Hall Annex, for 1,000 men.

In the first project, the use of substitute plumbing material was resorted to in only a small degree because arrangements had been made for obtaining conventional equipment in nearly sufficient amounts to complete the job.

In that project, substitutes in the form of plastic shower heads for metal shower heads, faucets of "victory brass" for chrome and real brass fixtures, and flush valves of "rough" brass represent about 25 per cent of such items in 85 lavatories and shower rooms. Of note, too, was the use of asbestos covered ductboard for heat ducts which reduced the metal that would ordinarily have been used by 95 per cent.

In Wilmington Hall Annex, which was nearing completion in March, substitute materials represent about 65 per cent of smaller fixtures. Plastics are used for such items as fixture handles, bathroom door knobs, shower heads, flush valve tail spins and short connecting pipe lengths in urinals. Toilet bowls, wash bowls, urinal stands and bathtubs throughout are of vitreous china and all fresh water piping is largely of the conventional type.

United Plumbing & Heating Co., North Hollywood, handled the plumbing work in the Wilmington Hall project; Howe Bros., Los Angeles, did the work in the Wilmington Hall Annex.

Other adaptations to wartime include the construction of wooden tanks in place of metal tanks for storage of furnace fuel oil in the Annex; and the use of concrete tanks instead of metal ones for oil storage in the Wilmington Hall unit.

Wilmington Hall is a housing development of 1,266 rooms in 62 dormitory buildings situated on 27 acres of land in the Wilmington war industry area of Los Angeles Harbor. The project was initiated by the Federal Public Housing Authority to house 2,000 men.

The Wilmington Hall Annex project consists of 860 war workers' living rooms contained in five large dormitory buildings on an 11½ acre site adjacent to the other project. It was designed to accommodate 1,000 men engaged in war work.

There is also a community center, conveniently accessible to and open to the residents of both housing units. The center consists of recreation, restaurant, management and health buildings.

The dormitories in Wilmington Hall are planned only for the duration; for that reason they are of wood frame construction, with prefabrication methods used by the contractors to expedite the work. The walls were constructed in sections in jigs and assembled at the individual building sites. The 62 one-story buildings in the first project have wood siding over surfaced studs and low pitched roofs, covered with composition shingles. These buildings each accommodate from 20 to 40 men.

(Turn to Next Page)

The photograph at the top of page shows a close-up of the type of construction used in the Wilmington Hall Annex

The dormitories are divided into rooms with connecting hallways. The rooms in some of the buildings are for one man and in others for two. Each dormitory has a central lavatory with shower bath facilities. There is a total of 200 showers, or one shower for every ten men.

United Plumbing & Heating Co. installed an individual shower and toilet room in each of the 62 one-story dormitories, as well as 23 other lavatories in the management, health, restaurant and recreation buildings in the community center. Typical of the larger plumbing jobs is the installation in the Management Building. This structure is equipped with five toilet rooms, four lavatories, two urinals and three showers. The 62 dormitories and four community buildings contain 85 lavatory and shower rooms.

United Plumbing & Heating Co. also handled the installation of service fixtures and miscellaneous medical fixtures, such as sinks, bowls and allied equipment, in the Health Building, as well as installation of gas, sewer and water lines and the oil distribution system for the heating setup in the Wilmington Hall project.

Heating of the housing units in Wilmington Hall is accomplished by means of individual furnaces. Installation was made by A. H. Berg & Son of Wilmar, Calif. Each housing unit serving 20 men has a separately controlled heating system. Some of the larger dormitories have two furnaces; smaller structures only one. There are 100 oil-burning forced air furnaces of 100,000 Btu each for supplying heat to the 62 dormitories and the community building. The number of furnaces in the community buildings varies according to the size of the structure; the management building, for instance, contains nine.

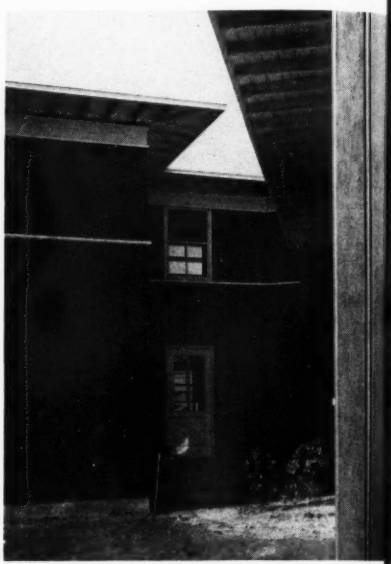
Thermostatic control maintains an even temperature throughout the buildings, clean, humidified warm air being distributed to the rooms through a duct system. One-half of the air is recirculated, the balance being fresh outside air drawn from the roof line to avoid taking dust or possible ground-clinging gases.

While in normal times gas is the most practical fuel in Southern California for projects of this type, oil-burning furnaces were decided upon because of the availability of the fuel supply. The housing project lies within sight of the derricks of the Wilmington and Signal Hill oil fields, which provided a satisfactory low-grade fuel oil for the fully automatic warm air furnaces.

An entirely new type of asbestos ductboard was used which reduced the steel ordinarily used by 90 per cent. A. H. Berg & Son, Wilmar, Calif., declared this to be the first time this type of duct construction has been used in the West.

Wilmington Hall Annex, which is situated adjacent to the first project, consists of five two-story dormitory buildings. Construction of the buildings is similar to that of the one-story units in the other project, except that the units in the Annex have concrete foundations and entrance steps.

(Continued on Page 77)



The picture at top shows exterior of Wilmington Hall Annex buildings. Center photo pictures typical shower room in the Annex. Each of the five dormitories in this project contains a shower room. Bottom photo shows a washroom in a two-story dormitory building in the Annex; note use of plastic fixtures and substitute brass

The window display of the Clayton Plumbing & Heating Company, Denver, is kept well lighted and attractive, even in these days of restricted materials. An outstanding record in remodeling and modernization work before the war, now helps Mr. Clayton retain his old customers and employees and brings him war home remodeling work

"No Labor Shortage . . ."

THAT it is easily possible for every plumbing job, no matter how slight, to form the basis for the sale of remodeling for war housing is a fact frequently overlooked by contractors of the country, according to Edwin Clayton, president of the Clayton Plumbing Company of Denver, Colorado, a national director of the NAMP and Colorado Assn. president. During the 32 years Mr. Clayton has operated his unusual shop and showroom in Denver, he has constantly built up a remodeling and new-fixture installation business on the very reasonable basis that all journeymen plumbers have an opportunity to inspect home plumbing; then report on it as a "lead" for good selling on the part of the management. This stands him in good stead now.

"We're termed merchandising plumbers," Mr. Clayton says, smiling. "Although we think we are actually just following a natural course of events whenever a service call comes in. We expect our journeymen to be just as good salesmen as they are mechanics; to be able to discern where business may be had, and to help us get it. Other than that, we believe in advertising, and are probably Denver's largest user of newspaper advertising in the plumbing field. Almost any contractor with showroom space and facilities for spending part of his time in sales work can duplicate that pattern."

Although he modestly disclaims credit for "anything new" in plumbing fixture merchandising, Mr. Clayton has installed a vast number of modern new bathrooms in Denver homes, and has through the years developed the design and execution of modern bathrooms into an outstanding specialty with the shop. Located near East Denver's populous Park Hill district, with thousands of homes around the $5,000-$7,000 bracket, Clayton Plumbing Company specializes in domestic plumbing repairs, does a large jobbing business which amounts to around 50 per cent of the total yearly volume.

Over his repair business, which was always heavy, Mr. Clayton used to do a consistently large volume in complete model bathrooms and fixture replacement, at an average of from $225 to $300 for baths in Denver homes before the war.

Mr. Clayton doesn't believe that the average contractor can or should try to make maintenance and repair work alone pay him any more than a salary unless he has unusually good business sense and pays strict attention to details.

Thus far the Clayton Plumbing Company has not been troubled with labor shortages. This is due, Mr. Clayton believes, to the fair and equal treatment which he always has given his journeymen. "The shop is more like a home," he asserts. "And when a man can average $3,500.00 per year, be home with his family every night, take time off when there is sufficient reason or necessity, and still be rendering his country a needed service, then the incentive to look for high-paying, short-lasting jobs is gone."

Questions From Readers

Restoring Service

To the Editor:

I would appreciate it if you could give me your opinion on the following two methods of turning on the water in a residence or building after the building lines have been drained for repairs. "A" says to open the gate valve slowly, notifying the customer to keep open all faucets, closing those nearest the gate valve, and then those farther away, as the flow reaches them. "B" says to open the gate valve slowly and then as the water flows through this valve to open the faucets a small amount until the flow takes place through the faucets.

Formerly, I had always restored service the way subscribed to by "A" but I have had quite a bit of bad luck this way. Once, for example, the water flowing through the valve unrestricted by the air pocket at the faucets caused rust in the pipes to loosen and plugged the piping concealed in the walls. Since that time I have done it as suggested by "B."

New York. T. C.

To the Reader:

We believe that the better method is to close all of the faucets in the building, then to turn on the main valve a little allowing the system to fill gradually. Then open the main valve to its fullest extent (after there is no more noise of water passing through the cracked valve). After the service is restored, each faucet should be opened long enough to run out the air trapped in the lines and branches after which the system will be ready for service as usual. You will note that this basically is the same as the method proposed by "B" in your letter.

If you should open all faucets before turning on the main valve it follows that the lower faucets will begin to flow first and as these are turned off the water will be forced into the faucets on the higher floors which may result in some splashing or overflow.

• • •

Fusible Plugs

To the Editor:

We have had some difficulty obtaining fusible plugs for boilers. The thought has occurred to us that we might make these by filling the inside of regular bushings with the proper material. Do you know what these plugs are filled with? Is it some special metal or would wiping solder or 50/50 solder or pure block tin, or lead answer the purpose? Would an ordinary bushing be of the proper length to assure complete safety? Also, might there not be some danger if these plugs are to be hand-filled that the wrong type of metal might be used as a filler?

Alabama J. R.

To the Reader:

First, we consulted the ASME Boiler Construction Code which says:

> "Fusible plugs, if used, shall be filled with tin with a melting point between 400 and 500 deg F and shall be renewed once each year. The least diameter of fusible metal shall not be less than ½ in. except for a maximum allowable working pressure of over 175 psi; or when it is necessary to place a fusible plug in the tube, in which case the least diameter of fusible metal shall be not less than ⅜ in."

Next, we contacted several manufacturers of fusible plugs. The answers received from these manufacturers follow. Some answers which were received were duplicated in the ones printed below.

One manufacturer said: "You see, fusible plugs are filled with a special tin alloy of which the main constituents are tin and antimony, both very critical materials. That is the prime reason that fusible plugs are hard to obtain. Now it's possible that a soft substitute metal can be used with safety, but we doubt it. Furthermore, if fusible plugs were refilled with the wrong kind of metal there's no telling what might happen. If the metal had an extremely low melting point, it might drop out of the plug and thereby release water and steam from the boiler. On the other hand, if it had too high a melting point, serious consequences might have to be dealt with."

Another manufacturer pointed out: "The proportions and shape of fusible plugs have been the result of long study, not only by individual companies who manufacture fusible plugs, but also by the Bureau of Standards in Washington working on behalf of the Navy department. It is my belief that no adaptation of a bushing or any shape other than the one prescribed would result in a dependable plug.

"The only filling that is satisfactory for fusible plugs which are exposed to furnace gases is tin of a very high order of purity. No alloy, so far as I know, will serve this purpose. The furnace gases attack the alloy and in many instances have reduced it to an infusible mass, which, of course, renders the plug useless for the purpose which it was intended. The Bureau of Standards discovered that even the small amount of zinc which the tin would take up from the bronze casing was sufficient, in some instances, to render the plug inoperative."

A third company executive comments as follows: "Although some manufacturers use a 50/50 solder composition for filling in fusible plugs, we have always used a 90 per cent pure block tin filler. One point we would like to make is that codes in different parts of the country specify lengths and filler for the plugs. These codes should be kept in mind before your subscriber goes ahead in making up his own fusible plugs."

• • •

Cold Storage

To the Editor:

We propose to build a cold storage plant 26 ft long, 10 ft wide and 8 ft high underground. The space will be divided into one room 10 ft x 10 ft and one room of 10 ft x 16 ft. It is proposed to carry a temperature in the 10 ft x 10 ft room of about 30 deg and in the 10 ft x 16 ft room of 36 degrees.

Could you give us an idea as to how the walls and roof should be constructed and any suggestion as to how to ventilate the rooms? We also should like to know the size of the compressor and any other information you consider might be of help.

Washington C. J. Z.

To the Reader:

One way to construct such a plant would be with a concrete floor, walls and roof, the floor being about 6 in. thick, the walls 12 in. thick and the roof of sufficient strength to carry the superimposed earth load, whatever this may be. In any event, the roof would be of reinforced concrete probably 4 in. thick with concrete beams to stiffen up the slab. Then the interior surfaces for the walls and ceiling would be covered with 4 in. of cork laid with corkboard 2 in. thick in two layers with broken joints and with the joints and surfaces covered with hot pitch.

Then a similar treatment would be applied to the concrete floor and the floor cork run over and joined to the cork on the wall. To protect the wall and ceiling metal lath would be placed over the cork and two coats of cement mortar applied to the lath so as to get

(Continued on Page 62)

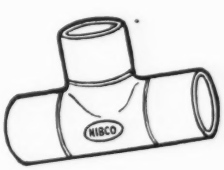
OUT OF THE CRUCIBLE OF *War...*

COME NEW IDEAS FOR *Tomorrow!*

UNDER THE stimulus of War American industry is evolving more new ideas, new processes and new materials than was even thought possible twelve months ago. Through new adaptations of our equipment and processes we are today turning out many types and sizes of multiple valves and special fittings for the Armed Forces far different from anything we ever did before. Some of them are so large and so complicated that it seems truly an engineering miracle that they should come out of the same foundry and off the same production lines that formerly produced only small parts, like solder fittings.

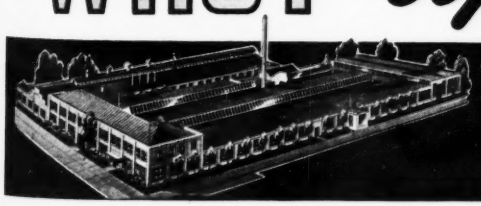
When "Tomorrow" comes, we will be ready for the tremendous wave of building that is sure to come . . . ready with new products, new methods and finer quality than ever before. From the labor pains of War with all its horrors a bright new world will be born for us all.

While our production facilities are completely at war work, we may be able to furnish NIBCO Wrot Fittings on priorities from stock. We will be glad to discuss your needs and problems with you and help you if we can.



NIBCO

WROT *Copper Fittings*



NORTHERN INDIANA BRASS CO.

ELKHART, INDIANA

VALVES AND FITTINGS SINCE 1904

Questions From Readers

Cold Storage

(Continued from Page 60)

a thickness of about 2 in. To protect the cork floor, a concrete floor about 4 in. thick would be laid on top of the cork. The roof would be covered with tar paper of three or four thicknesses pitched onto the concrete and between each thickness and on the top surface.

Then earth would be dumped onto the top of the structure to fill up to the grade level. If the roof should be exposed above ground, then one of the standard types of roofing could be applied or the well known tar and gravel roof used.

This is one way that the structure could be built. Another method is by using a double wall with about 6 in. or 8 in. space between the walls and filling this space with some type of insulation such as rock wool, glass thread, mineral wool or sawdust. The roof and floor could be made of joint construction with the spaces between the joists filled with similar insulation. All wood in contact with the ground or subject to dampness should be painted two coats of asphaltum paint before cutting and should have all ends, and other places, where the wood is exposed after cutting, painted with asphaltum so as to have the interior portion thoroughly protected.

Provided that these rooms simply are storage rooms, the removal of heat from the larger room will be about 16,000 Btu per hour and from the smaller room about 10,000 Btu per hour. This makes a total of 26,000 Btu per hour or 2.17 tons of refrigeration; we would suggest a three ton compressor. The cooling may be done by coils hung on the ceiling or by small circulating units which are similar to the ordinary unit heater except that the refrigerant is circulated through the coils of the units and a small fan circulates the air through the unit giving cooling and air movement at the same time. We are of the opinion that no particular need exists for special ventilation unless there is something about the installation of which we are not aware.

Automatic control should be provided for the compressor from a thermostat located in the 30 degree room leaving the 36 degree room to follow along as it will. If cooling units are used each should be controlled from a thermostat in its own room as these will not run constantly. Coils, if used, would be placed on the ceiling and either located where drip would not hurt the stored product or provided with drip pans having drains down to the floor to provide for de-frosting.

• • •

Boiler Breechings

To the Editor:

We are working on a job on which the specifications call for the following type of cover for the boiler breechings: metal lath to form a 1 in. air space between metals then cover the metal lath with 2 in. magnesia blocks and ¾ in. asbestos cement.

Can you tell me why boiler breechings are covered and why the specifications are so exacting?

Michigan. **B. C. M.**

To the Reader:

Boiler breechings always are covered on first class work. The reasons for this:

1. Prevention of overheating in the boiler room by the heat which would be emitted from this high temperature surface. The temperatures usually run around 600 degrees.

2. To secure better chimney draft owing to the gases being at a higher temperature in the chimney if not allowed to radiate their heat through the breeching.

3. To avoid burning the operators by accident.

4. To make a better appearance in the boiler room as it is almost impossible to keep breechings painted so that they look well any length of time.

The requirements in the specification which you quote, would furnish a very good type of breeching insulation.

• • •

Buoyancy

To the Editor:

I would appreciate it if you could give me directions on making the following calculation. If I had a 1,000 gal tank and sank it in 112 ft of water how much weight would this tank be able to lift from the bottom if the water in the tank was pumped out and replaced with air at 50 lb pressure?

Ohio. **H. E. H.**

To the Reader:

The 1,000 gal tank will lift the weight of water which it displaces less the weight of the tank. As water is practically incompressible the weight of water 112 ft below the surface is practically the same as water at the surface. The temperature of the water would make more difference than the depth. We assume you want a practical answer more than a very theoretical one in which case we will assume that your tank weighs 1,000 lb. It will displace approximately 1,000 gal of water which at an average weight of, say, 8⅓ lb, amounts to

1,000 gal × 8⅓ lb or 8,333 lb

deducting from this the weight of the tank or 1,000 lb

leaves as the buoyancy of the tank 7,333 lb

and this is the weight it would lift with the conditions assumed.

The tank would not have to be filled with air at 50 lb pressure unless this air were used to drive the water out of the tank or to prevent the water pressure crushing the tank. If you must have the air it would, of course, have some weight, though not very much. There would be about 130 cu ft of air which at 50 lb gauge would have a volume of about 3 cu ft per pound. The weight of the air would be around 43 lb which would decrease the lifting power by that much if you want to get down to such a refinement.

• • •

Can You Answer This?

The following question is published in order that readers may submit their solutions. For the most complete and accurate answer, which will be published, Domestic Engineering will pay $5.00. Address your answers to The Editor, Domestic Engineering, 1900 Prairie Ave., Chicago.

A 4 in. water line under 50 lb gauge pressure has a full sized outlet closed off with a screwed cap. What is the total pressure on the cap tending to blow it off the outlet and what is the stress per lineal inch of thread? Assume that the cap is screwed onto the pipe for a distance of 1¼ in.

• • •

Answer from Readers

The following letter presents the answer to the "Question for Readers" which was published in the March issue of Domestic Engineering.

Appearing directly above is another question which readers are invited to answer.—Ed.

To the Editor:

The following is my solution to the problem in this month's DOMESTIC ENGINEERING.

(Continued on Page 74)

YOUR *Scrap* CAN POSTPONE 1950

FROM these reserves, two extra pounds of ore must be used for each pound of scrap you fail to turn in.

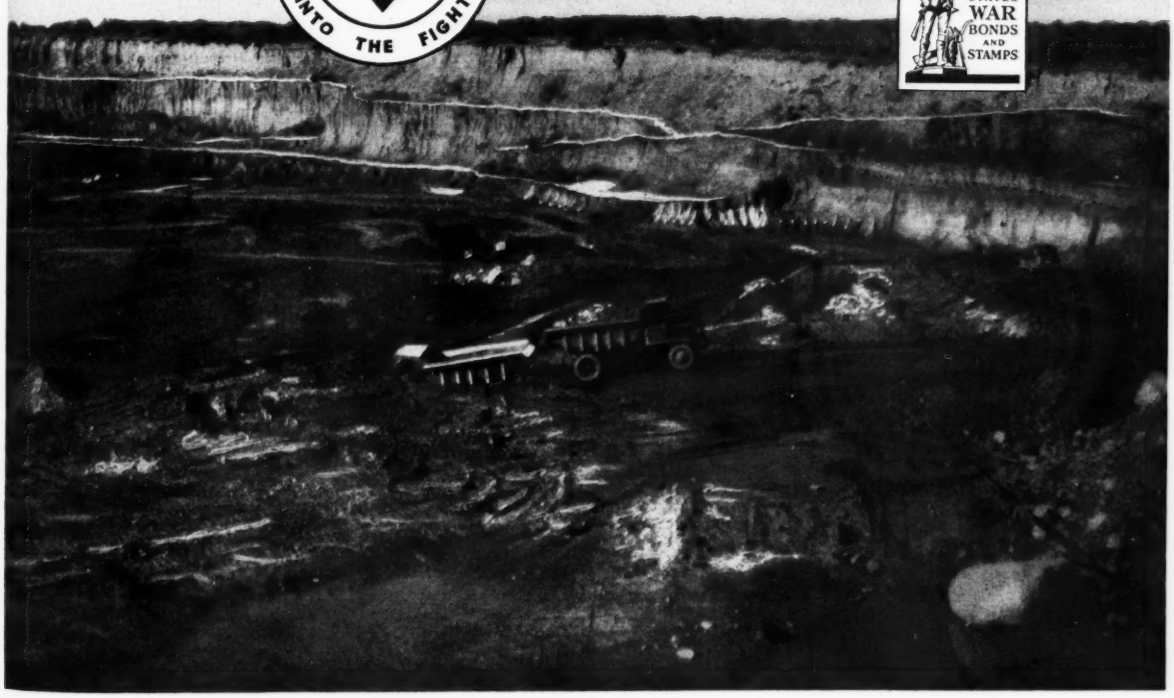
Vast as they are, America's precious iron deposits are not limitless. Considering the terrific drain on them now for those extra pounds to win the war, experts say our high-grade Lake Superior district reserves will be exhausted in a few more years . . . by 1950 . . . or sooner.

So the steel industry needs every pound of scrap you can muster . . . today, next week, next month, every month. Scrap is vital for Victory over the Axis . . . and vital also, to conserve the natural resources we shall need for reconstruction after Victory.

THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO

THROW YOUR SCRAP INTO THE FIGHT
TRADE MARK
YOUNGSTOWN

FOR VICTORY
BUY UNITED STATES WAR BONDS AND STAMPS



They're learning a lot about fuel saving!

Adversity is a great teacher. Thousands of dwellers in homes large and small are today finding out things they never knew about heating economy. Some of them are learning the hard way — discovering for the first time that their heating equipment is wasteful of fuel, and that restricted rations mean discomfort. Now they're watching the fuel gage with hawk-like intensity, and praying for an early Spring.

Others, however, have a self-satisfied look when the subject is broached. These are likely to be the people who have Fitzgibbons Steel Boilers or Air Conditioners. They have perhaps shut off a spare room or so, learned to use care in other ways, and without sacrifice of comfort are keeping within their budgeted fuel ration. These people are feeling pretty thankful today, for the excellent judgment of their dealers who recommended "Fitzgibbons."

Among the less fortunate, more and more often you hear the plaint—"Wish I had a Fitzgibbons — I'll never build another house without one!"

BUY U. S. WAR BONDS and STAMPS

MOST ECONOMICAL IN FUEL
1886
THE FITZGIBBONS BOILER

Fitzgibbons Boiler Company, Inc.

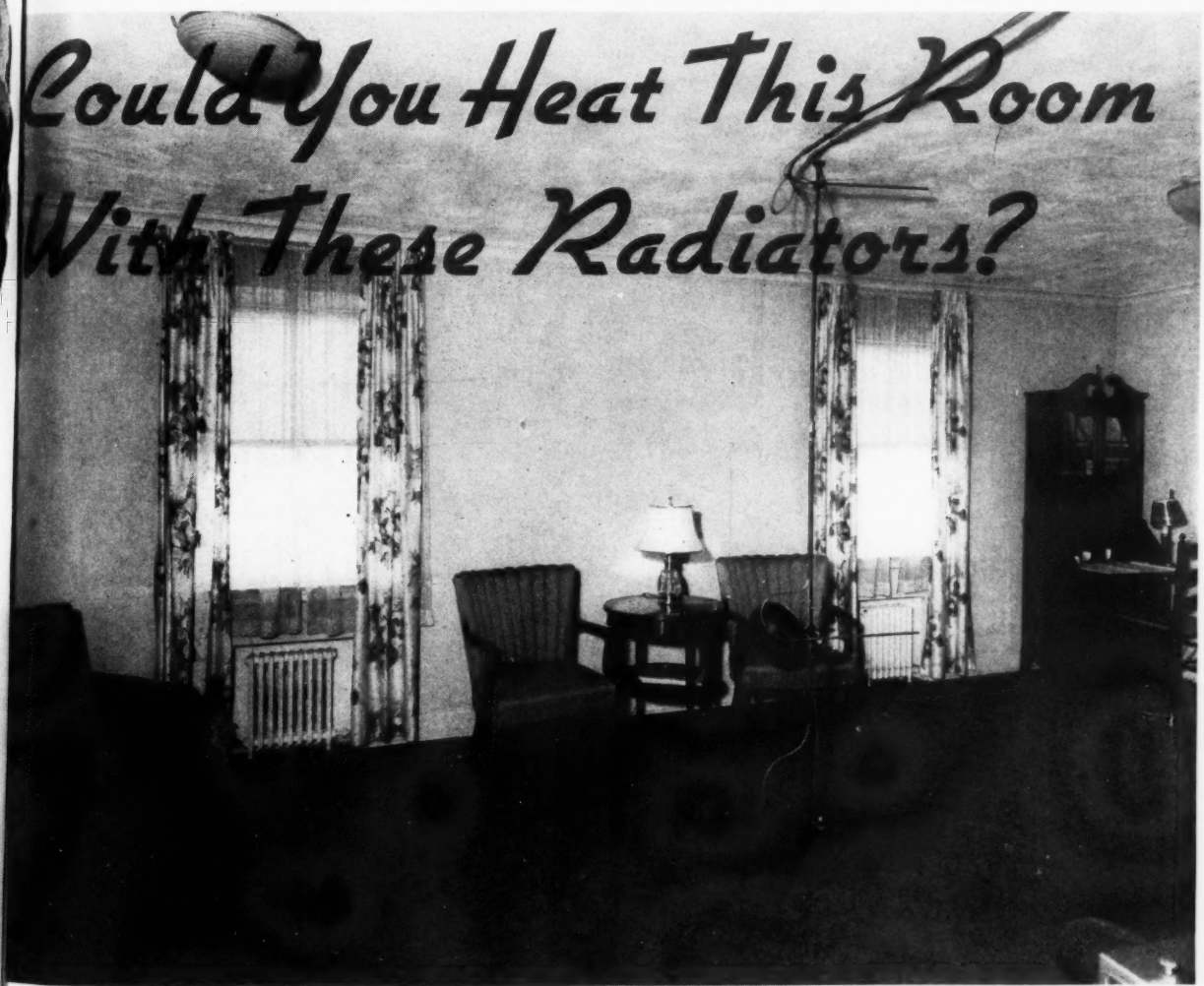
101 PARK AVENUE, NEW YORK, N. Y. **WORKS: OSWEGO, N. Y.**

Branches and Representatives in Principal Cities

FITZGIBBONS

Steel Boilers and Air Conditioners that make fuel go farther

AUTOMATIC HEAT and AIR CONDITIONING Section



ABOVE is pictured the living room in the I-B-R Research Home in Urbana, Ill., showing the new, tiny radiators now installed for current studies. Readers will remember that excellent results were obtained in the winter of 1941-42 with a relatively small radiation surface in this forced hot water system. Now, the experiment is being followed to its logical conclusion with even less radiation and even smaller piping. The two radiators shown here, heating a large living room with open stairway, are 16 in. long, 19 in. high and 4½ in. deep.

Results of the current research are not yet available, and it is definitely not suggested that contractors attempt to install such midget systems without complete facts.

The picture is shown here, however, to emphasize the point that many systems are sized too large, and to point the trend toward space- and metal-conserving systems.

MH *Electrons* ARE COMING!

Every day M-H Electrons are coming closer—closer to you. Today they are performing miracles on our fighting fronts, in warcraft and on protective devices. Tomorrow, when Peace comes, M-H Electronics will be applied to temperature and industrial control, to bring to you and your clients and customers new miracles of comfort, economy and convenience. M-H Electronics, like M-H Automatic Controls, will make possible better Automatic Heating. Minneapolis-Honeywell Regulator Co., 2801 Fourth Avenue S., Minneapolis, Minnesota. Branches in principal cities.

★ *Listen:* "JOHN FREEDOM" Blue Network Coast to Coast every Wednesday, 9:00 to 9:30 P.M. Eastern War Time; or see your local newspaper. *"The Most Dramatic Show on the Air"*

MINNEAPOLIS-HONEYWELL
CONTROL *Systems*

This is the face of a gauge that gives new meaning to accuracy and stamina—the Marsh "Mastergauge".

Where have you seen THIS face before?

IT'S a familiar face—the honest face of a good instrument. You have looked at it on boilers, compressors, tanks — innumerable places where proper, safe operation depends on accurate pressure indication. It was chosen in many cases by manufacturers who knew that the success of their products rested in no small part on the truthfulness of its pressure or vacuum indication.

Often that face is the face of a veteran—a gauge that has been at it a long time, operating under tough conditions. But as you trace back over the Marsh Gauges you have known, can you recall a single one of them that has ever failed to do its job right?

To build such a gauge requires more than good design and construction. It takes a great fund of practical knowledge to guide that design—knowledge that can be acquired only in the vast proving ground of industry. It takes the kind of knowledge of every conceivable service condition that Jas. P. Marsh Corporation has been accumulating for more than 75 years.

The Gauge with the "RECALIBRATOR"

A gauge built to Marsh Standards is not likely to be knocked out of adjustment. But if it is, the Marsh "Recalibrator" will quickly restore its accuracy. Simply turn the "Recalibrator" screw until the pointer is at zero when not under pressure. The gauge will then be right at all points on the dial. Unlike other methods of re-setting, the "Recalibrator" gets at the root of the error — re-establishes the relation of the bourdon tube to the movement — actually *re-calibrates* the gauge.

The accuracy and stamina that you have come to associate with Marsh Gauges is found in all Marsh products — Dial Thermometers, Recorders, Heating Specialties. Naturally, when U. S. Industry went to war, Marsh Instruments were given vital assignments for which their great record so well qualifies them. There is a Marsh Instrument for practically every pressure or temperature measurement requirement.

JAS. P. MARSH CORPORATION
2051 Southport Avenue, Chicago, Illinois

MARSH GAUGES

DIAL THERMOMETERS ★ RECORDERS ★ HEATING SPECIALTIES

The Basis for CONVERSION

AUTOMATIC HEAT and AIR CONDITIONING Section

When coal or oil burns inside a boiler's combustion chamber certain chemical and physical reactions take place. Read this article in order to understand just how these actions affect your own conversion job

By HERMAN E. WINKLER*

ONLY a few fundamental facts regarding the chemistry and mechanics of combustion are involved in engineering a conversion from oil to coal firing. The procedure is not mysterious, difficult or complicated. There are a few things which must be known and understood, but anyone willing to pay a small price in study can quickly acquire the necessary facts.

It may be surprising to learn how similar are the basic principles of oil and coal combustion and how knowledge of a few simple rules will enable a contractor to engineer an oil conversion job with complete confidence that satisfactory results will be obtained.

True enough, the stoker business is not like selling pianos or refrigerators, where relatively no engineering information is necessary. Enough technology is involved so that the remuneration of the stoker man includes, in addition to his sales commission, a very substantial return for being an expert in the heating business. The price paid in time to acquire adequate information to merchandise stokers therefore returns immense dividends.

The starting point in any discussion about either oil-firing or coal-firing is the boiler. A boiler basically is just a *heat catcher and transferrer*. It catches the heat released in the firebox and transfers it to the water in the boiler which eventually becomes steam. It doesn't matter whether the source of heat is oil or coal, so in this fundamental aspect there is no difference between oil or coal-firing.

To enable a boiler to develop the same output with coal-firing as with oil-firing, we must provide conditions which will allow the boiler to catch an equal amount of heat.

Heat release in the firebox of a boiler is a function of two factors which are—1. Weight of fuel burned; 2. The efficiency of burning.

In other words, a given heat release in a firebox can be assured by burning a lot of fuel at a low efficiency or by burning less fuel at higher efficiency.

What is meant by efficiency? By definition the word means the ratio of what you get back to what you put in. In this case we are dealing with Btu, the standard heat measurement unit.

In combustion work there are two kinds of efficiency to be considered—1. Burning efficiency; 2. Over-all plant efficiency.

Burning efficiency has to do with what takes place in the firebox only and has nothing to do with the boiler outside the firebox.

Over-all plant efficiency combines burning efficiency with the ability of the boiler to catch the heat released in the firebox.

Discussing these two efficiencies in order, burning efficiency is a function of the fuel employed, so let us see how oil and coal compare in this respect. Here is a typical "as fired" analysis of coal—

Fixed Carbon	50%
Volatile Matter	38%
Sulphur	1.2%
Ash	7.8%
Moisture	3%
Heat Content	14,000 Btu per lb

And here is a similar analysis of fuel oil—

Carbon	83%
Hydrogen	14%
Sulphur	1%
Nitrogen	2%
Heat Content	19,000 Btu per lb

The components which provide the heat in coal are the fixed carbon and the volatile matter. In oil, it is the carbon and hydrogen.

Let us consider what happens when anything burns. Burning is the rapid combination of a combustible with oxygen, which takes place, if in the presence of sufficient oxygen, at temperatures above the ignition point of the combustible. The higher the temperature,

*In this article Mr. Winkler presents some of the basic facts which are necessary to enable contractors to gain a clear knowledge of what actually takes place when fuel burns within a boiler's combustion chamber. This article is abstracted from part of a presentation given by Mr. Winkler, executive vice president for U. S. Machine Corporation, at recent engineering meetings. Comments from others on this subject are invited.

the more rapid the burning or oxidation.

The result of the chemical reaction of oxidation is the liberation of heat and the formation of the oxide of the combustible material being burned.

What is Oxidation?

For example, the oxide of carbon, is carbon dioxide, CO_2, and the heat released by the oxidation, or burning, of one pound of carbon is 14,600 Btu. The oxide of hydrogen is H_2O, or water (actually steam at the temperature at which the reaction takes place) and the heat released by burning hydrogen is 60,000 Btu.

Considering the combustion mechanics of coal, carbon is the principal heat generating ingredient, as shown by the preceding percentage table. The oxygen required for combustion is supplied by the air sent into the firebox. Air is composed, by volume, of 20 per cent oxygen and 79 per cent nitrogen.

When the oxygen in air combines with just the right amount of carbon, graphically this is what happens:

C (carbon)	+ O_2 (oxygen)	=	CO_2 carbon dioxide)
1 lb.	2⅔ lb.		3⅔ lb.

From the above burning or oxidation process, 14,600 Btu of heat are released. (This amount of Btu is the theoretical value of complete combustion and is not possible in actual practice. Heating engineers strive only to approach it.)

The above equation pre-supposes that the theoretically correct amount of air has been supplied to the combustion process. Let's see what happens if too little air, and therefore too little oxygen, is furnished to the fire.

Properties of Carbon

Carbon has the propensity to accept *partial* oxidation. In this case, the products of combustion contain large quantities of carbon *monoxide* or CO instead of being all carbon *dioxide*, CO_2, as would occur if oxidation were complete. Graphically the reaction looks like this—

C (carbon)	+ O_2 (oxygen)	=	CO
1 lb.	1⅓ lb.		2⅓ lbs.

In the above example, only 4400 Btu are released—an outstanding case of incomplete combustion.

Thus, at any time that conditions in the firebox permit the formation of CO which escapes through the flue, the fuel has yielded only about one-third of the heat it might have, had the carbon content been completely reduced to CO_2. The presence of CO in flue gas, therefore, always indicate a loss in burning efficiency.

On the other hand, *too much* air in the firebox also causes a loss in burning efficiency. You will recall that air is 79 per cent nitrogen, and nitrogen is an inert element as far as combustion is concerned. It will not oxidize (burn) in any temperature we can get in a firebox. Nitrogen, however, absorbs heat from the fire until it is the same temperature as the flue gas. It then goes the way of all flue gas—up the chimney and gone forever—carrying with it a large proportion of unused heat.

The same is true of oxygen, if more than necessary is furnished. An excess supply cannot find any carbon to tie-up with and accordingly moves right out the stack in an unburned condition loaded with the heat it has soaked up.

Too Much Oxygen

Nothing can be done about this condition except to exclude all air above the necessary amounts. Excess air moves through the firebox in an unchanged state, being raised in temperature only. It obviously reduces the percentage of CO_2 found in the flue gas and therefore lowers burning efficiency. Some excess air, however, is required in practice, for reasons explained below.

To sum up, the four requirements necessary for proper combustion and *highest burning efficiency* are:

1. A high enough temperature in the firebox to properly ignite the various combustibles.
2. More than the theoretical amount of air required to furnish oxygen to burn the combustibles. In practice, this excess requirement is a minimum of 50 per cent. We cannot expect each atom of oxygen to find its mate in carbon during its short stay in the firebox. We must put in more than the theoretical quantity in order to avoid the formation of CO. We lose heat less rapidly because of excess air than we lose through the formation of CO due to lack of enough oxygen to unite with all the carbon and produce CO_2.
3. The air and combustible gases must be thoroughly mixed, and in a zone of high enough temperature to maintain ignition. This is commonly known as turbulence.
4. Time for the "mating" process of oxygen and combustibles to take place is necessary. This demands the provision of an adequate combustion space in the firebox.

All the chemistry of combustion covered so far applies to either coal or oil.

Problems are Similar

A realization of how much alike the *basic* problems are aids in a readier recognition of certain differences in the application of oil and coal-burning equipment—differences which are necessarily involved in the conversion from one to the other.

It has already been stated that an analysis of the flue gases would show the degree of burning *efficiency*. While there may be oxygen (O_2), carbon monoxide (CO) in addition to the nitrogen (N) in stack gases, it is the percentage of carbon dioxide (CO_2) which really counts.

Since there is 21 per cent oxygen in the air, theoretically perfect combustion of carbon would put 21 per cent of CO_2 in the stack gases. But with coal as fuel, at least 50 per cent excess air is necessary in practice; therefore a range of 12 to 14 per cent CO_2 is considered excellent.

Oil does not reach this percentage of CO_2 in the products of combustion and average oil-burning efficiencies are 6 to 10 per cent less than average stoker efficiencies.

At this point, let us consider the difference between the *burning efficiency* and *over-all plant efficiency*. If the firebox just discussed in connection with flue gas analysis and burning efficiency were out in the yard with no boiler attached, all the remarks about burning efficiency would still hold good.

Stack Temperature

But so far no mention of stack gas *temperature* has been made. It is this temperature which determines the degree of *over-all plant efficiency*.

Remember that the boiler is a heat *catcher*. If it does a good job of pulling down the temperature of the gases leaving the firebox, it is said to have a *high absorption* efficiency. If it does not do a good job of pulling down the gas temperature, it has a low *absorption* efficiency.

The following points reveal the complete efficiency story:

1. The flue gas analysis, or CO_2 reading, indicates the *burning efficiency* of the fire in the firebox.
2. The *temperature* of the gases leaving the boiler indicates the absorption efficiency of the boiler.
3. A combination of the *burning efficiency* (CO_2 in percentages) and of the stack temperature (degrees F) indicates the *over-all plant efficiency*.

In other words, if gases leaving the boiler have a high CO_2 content and a low temperature, then the over-all plant efficiency is excellent.

This discussion of elemental chemistry and physics is intended merely to establish a framework of conditions to be met. They must be considered in tackling the detail of practical problems in the appplication of stokers to oil conversion.

Thus far thought has been given only to those conditions which are practically parallel in the combustion of coal and oil fuel. So let us now consider the major *points of difference* between the

(Continued on Page 81)

Tank Heater Idea Favored

Thulman heads study on booster subject for action by Office of Civilian Supply. Order changes involved

Washington, D. C.—The Office of Civilian Supply is now considering production of new tank heaters to be used as boosters in oil-fired systems in order to relieve the fuel oil shortage. OCS, as claimant agency for Class B products under the Controlled Materials Plan, is an important factor in the total plumbing and heating industry picture.

The Office of Civilian Supply has turned the project over to the National Housing Agency for a study to determine the availability of materials, fuel and transportation to support a program of tank heater manufacturing. This survey will be conducted by R. K. Thulman, engineer consultant on plumbing and heating for NHA.

The Plumbing and Heating Section of OCS points out that a production program for tank heaters will require modification of two orders—L-171, limiting the weight of metal used in tanks, and L-79. P-84, it is commonly understood, is now in the process of revision. The new tank heater order will be ready before the new heating season, OCS predicts.

Revision of the orders will require coordination of the programs of the Plumbing and Heating Division of WPB, of OPA, and OCS. At this stage, two methods of distribution are under consideration—release of heaters on a certificate plan in the fuel oil rationed area, and sales on the open market. The last named plan is favored because it is reasoned the heaters will not be requested except by fuel oil users who need them.

OCS expects to have authorization for heater production in the next six or eight weeks when the manufacturers' production season normally begins.

W. J. Bapst, Jr., chief of the Plumbing and Heating Section, Office of Civilian Supply, who is responsible for developing programs which will help to maintain established civilian markets or which will increase production of equipment that will aid the war program. Mr. Bapst came to WPB in January, 1942 as a priority specialist with the Plumbing and Heating Division. He was with the Construction Bureau as consultant on plumbing and heating in New York City from June until August, 1942, when he took over his present job

More FHA Money

Washington, D. C., March 27—Approval of amendments to the National Housing Act just voted by Congress makes Title VI insured financing available for approximately 90,000 additional dwelling units to be built for war workers by private builders.

The amendments increase the Federal Housing Administration's war housing mortgage insurance authorization under Title VI by $400,000,000 to $1,200,000,000 and extend the FHA's authority to insure under that title from July 1, 1943, to July 1, 1944.

The increase in Title VI authorization was requested by the National Housing Agency in order to assure adequate financing arrangements for the private units still to be started under the NHA's current program to meet war housing needs created by in-migration of war labor through July 1 of this year, Mr. Blandford said.

Controlled Materials

Washington, D. C., March 24—The War Production Board's Requirements Committee has completed making allotments to industry divisions to cover the requirements of Class B producers for steel, copper, and aluminum approved on CMP Form 4B, it was announced today.

WPB industry divisions will spend the rest of this week processing 27,000 applications, and making allotments to manufacturers engaged in the production of Class B items.

Allotments to cover common critical components, vitally essential to the war effort, and falling within the list of Class B items, are being made in advance to cover the remaining quarters of 1943 and the first quarter of 1944.

Housing Procedure Is Simplified

Washington, D. C., March 24—The War Production Board today announced that purchase orders for rated materials going into privately-financed housing construction will no longer require authentication by Federal Housing Administration field offices.

As an alternative, the War Production Board and the National Housing Agency have agreed to establish a compliance inspection service under which FHA officials will conduct periodic inspections of houses under construction, and will check against the approved materials list the materials actually going into construction.

In the past, FHA officials were required to sign all purchase orders for rated materials to show suppliers that the use was justified.

The action today was authorized by an amendment of Preference Rating Order P-55, governing privately-financed new housing construction.

AUTOMATIC HEAT and AIR CONDITIONING Section

TOMORROW'S OIL-O-MATIC IS IN THE MAKING!!

TODAY the technical skill and precision production facilities that earned world-wide acceptance for Williams Oil-O-Matic Heating have but one job and one purpose. They are joined with all America in working for Total Victory.

It is perfectly natural, however, that engineers with more than twenty years' pre-war experience and leadership in designing and building fine heating equipment should visualize many of today's precision production innovations in terms of your Oil-O-Matic of Tomorrow.

New war-born skills and techniques, added to the tried and proved peace time experience of more than twenty years, will bring even greater efficiency and dependability, even more remarkable performance to Williams Oil-O-Matic products of tomorrow.

This Army-Navy "E" pennant—symbol of the "Know-how" that has won fear and respect for American War equipment on all fronts—flies proudly over the Oil-O-Matic plant.

★ ★ ★ ★ ★

WE SALUTE Oil-O-Matic dealers and all other oil burner dealers everywhere whose valiant service is paving the way for a great industry's tomorrow. It is to these dealers we dedicate this message—the first in a series appearing in March and April issues of national publications.

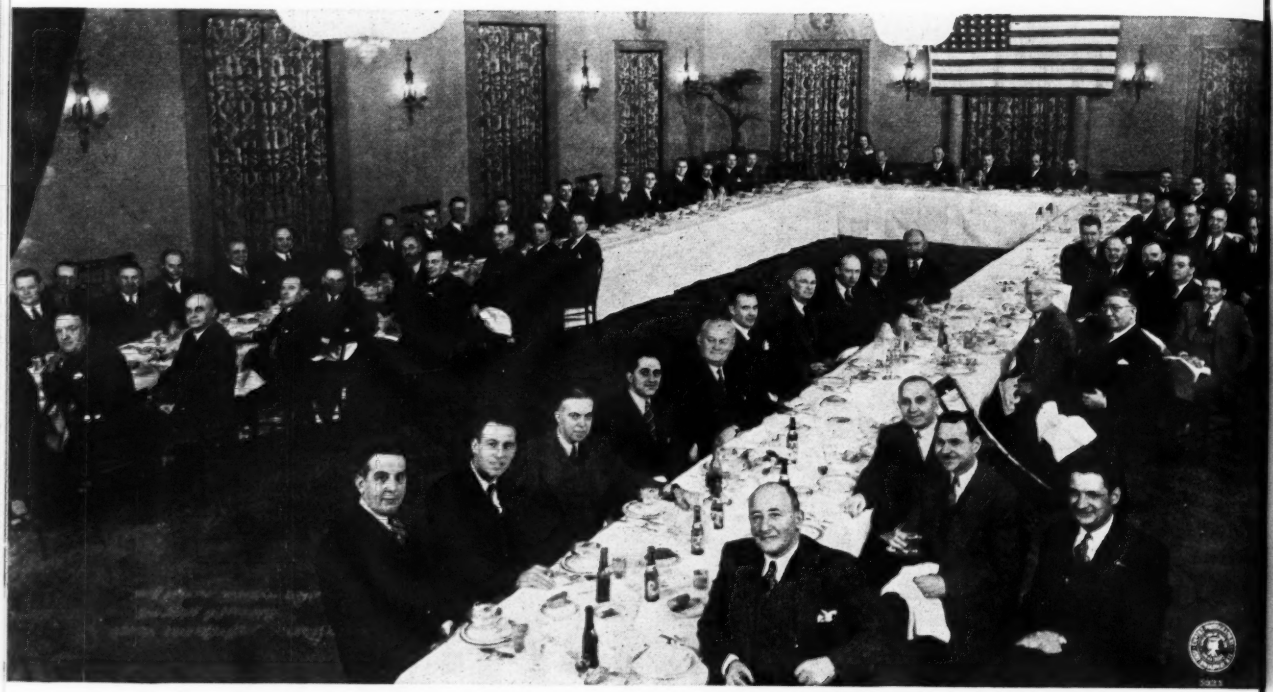
BUY WAR SAVINGS STAMPS & BONDS

THE BONDS YOU BUY TODAY ARE YOUR GUARANTEE OF A Better Tomorrow!

WILLIAMS OIL-O-MATIC HEATING CORPORATION

BLOOMINGTON ★ ★ ★ ILLINOIS

Oil-Heat Institute Talks



Conversion and Postwar . .

FUEL oil rationing and postwar were the two major themes at the annual meeting of the Oil-Heat Institute of America, held March 8 and 9 in the Hotel Commodore, New York City.

It was announced that the Institute is giving full cooperation to OPA in the direction of simplifying oil rationing procedure. A watchful attitude is being maintained to prevent forced conversion of residential heating plants unless and until such conversion is actually proved necessary to the war effort.

Looking toward the postwar market, speakers indicated that as many as two million new homes may be constructed annually. It was pointed out that the trend to smaller, well insulated homes would call for equipment of smaller capacity to operate at utmost possible efficiency. Close cooperation between the Institute's engineering committee and the engineers of the petroleum industry was advocated so that proper fuel oil specifications could be drawn up for small house heating.

AUTOMATIC HEAT and AIR CONDITIONING *Section*

Consensus held that postwar planning is important enough to require the appointment of a special committee for its consideration. Pres. C. E. Lewis stated that he would appoint such a group. (Since that date, W. A. Matheson has been named to head the committee).

It was reported that an effort is being made to assist both manufacturers and dealers to dispose of excess inventories to government agencies eligible to receive burners.

Election of officers for the coming year again places C. E. Lewis, Delco Appliance Division, General Motors Corp., in the president's chair. J. P. Rainbault, Air Conditioning and Commercial Refrigeration Department, General Electric Company, was reelected vice-president, and C. F. Curtin reappointed secretary-treasurer.

Directors elected for three years are: R. S. Bohn (Preferred Utilities), G. E. Hochstein (Heil), Stanley Hope (Gilbert & Barker), representative of S. T. Johnson Co., C. E. Lewis and J. H. Van Sciver (Bethlehem).

The new executive committee consists of: Alexis Doster (Torrington), W. A. Matheson (Oil-O-Matic), M. A. Powers (Timken), W. F. Brannan (Fluid-Heat), R. G. Whipple (Harvey-Whipple), in addition to Messrs. Bohn, Van Sciver, Rainbault and Lewis. This committee will meet in New York City on the second Tuesday of each month, and the board of directors will meet on July 13.

The Accessory Division of the Institute re-elected Alexis Doster and W. A. Kemp group chairman and group vice-

(Continued on Page 107)

Dinner group at March annual meeting of Oil-Heat Institute of America

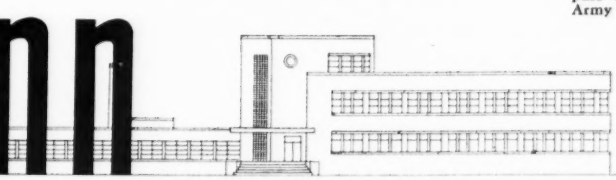
Every one of us at the Penn Electric Switch Co., is wearing the Army and Navy "E" today—and a beautiful new pennant floats with the Star Spangled Banner and the Minute Man flag above our plant.

For this recognition of our work in producing lighting and firing circuits for navy guns, periscopes for army tanks, and gun-firing solenoids for navy planes, we are grateful.

We see in this more than an award for past achievement. It is a challenge to continued and increased effort. To meet that challenge all of us have pledged our unremitting effort ...to support with our labors the men who fight our war... to keep the "E" flag flying... to dedicate our special skills and our production facilities to complete and final Victory.
Penn Electric Switch Co., Goshen, Indiana.

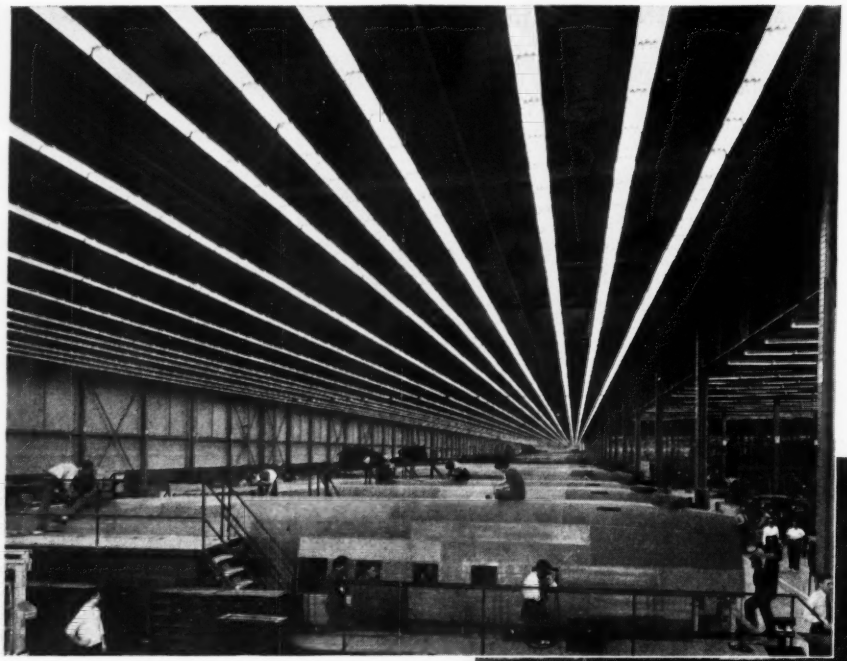
ARMY-NAVY "E" BADGE OF HONOR
is worn by all Penn employes, as a reminder of our pledge to surpass the record for which the Army and Navy "E" was given.

PENN

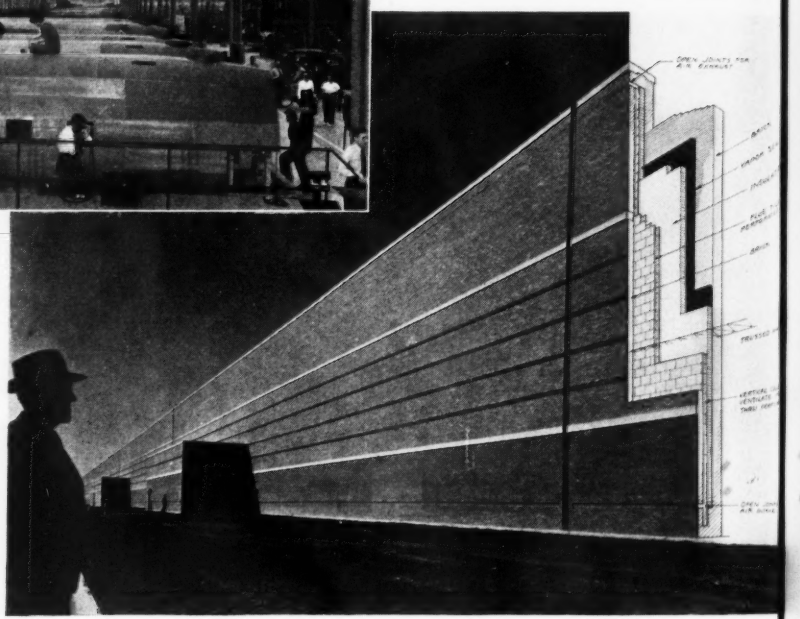


AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



The "breathing" walls of this windowless aircraft plant are installed in the largest masonry building in the world. Note the diffusers located in the ceiling (picture at left). The brick sidewalls of this building, over 50 ft. high, are ventilated through open vertical joints in one course of brick near the top and in two courses waist high near the bottom of the outer brick work. Insulating value equal to 80 in. of brick is obtained by use of ventilating tile, 4 in. rock wool and a vapor barrier. The vertical break shown on the right, below, is an expansion joint which is repeated at intervals along the length of the building. Reinforcing tile make the structure shatter resistant and keep the insulation permanently in place. The building was designed and construction was managed by the Austin Company



The Walls Breathe

(Continued from Page 62)

From the size of the room and the average outside temperature it seems that the house is heated by hot water. From the fact that the other rooms are maintained at a temperature of 65 deg and one room is left unheated the owner is apparently trying to save fuel by following suggestions put forth by government experts.

In this problem we will assume that the door mentioned is 1½ inches thick and has a U factor of 0.52. That the radiator is cast iron and the water temperature is 180 deg entering and 160 deg at the outlet or an average of 170 deg.

The correction factor for the above radiator will be

$$\left(\frac{215-70}{170-65}\right)^{1.3} = \left(\frac{145}{105}\right)^{1.3} \approx 1.38^{1.3} = 1.52$$

Then the output of the radiator will be $\frac{240}{1.52}$ which equals 173 Btu per square foot of radiation.

If the 70 sq ft radiator will just maintain a 65 deg room temperature when the outside temperature is 0 deg the heat loss of the room is 173 x 70 = 12,110 Btu and that amount divided by 65 indicates that 186.3 Btu are required for each degree that the room temperature is above the outside temperature.

The unheated room will receive heat from the surrounding rooms as follows:

144 sq ft x .25 = 36 Btu
200 sq ft x .34 = 68
16 sq ft x .52 = 8.3

112.3 Btu

for each degree that the unheated room temperature is below that of the surrounding rooms, or below 65 deg.

On a zero day the temperature of the unheated room will be as follows with "t" representing that temperature in the equation

$112.3\ (65 - t) = 186.3\ (0 - \text{plus } t)$
$7300 - 112.3t = 186.3t$
$298.6t = 7300$
$t = 24.5$ deg

As the difference between this room temperature and that of the surrounding rooms will be $65 - 24.5 = 40.5$, 112.3 x 40.5 indicates that 4550 Btu will be lost from the surrounding rooms to the unheated room.

12,110 Btu will be saved by turning off the radiator but 4550 Btu will have

(Continued on Page 103)

Questions . . .

COMMERCIAL AND INDUSTRIAL FUEL OIL USERS NEED YOUR HELP TO

CONVERT TO COAL...

GO AFTER THIS BUSINESS WITH

FREEMAN STOKERS

FIRST CHOICE OF AMERICA'S FOREMOST HEATING ENGINEERS

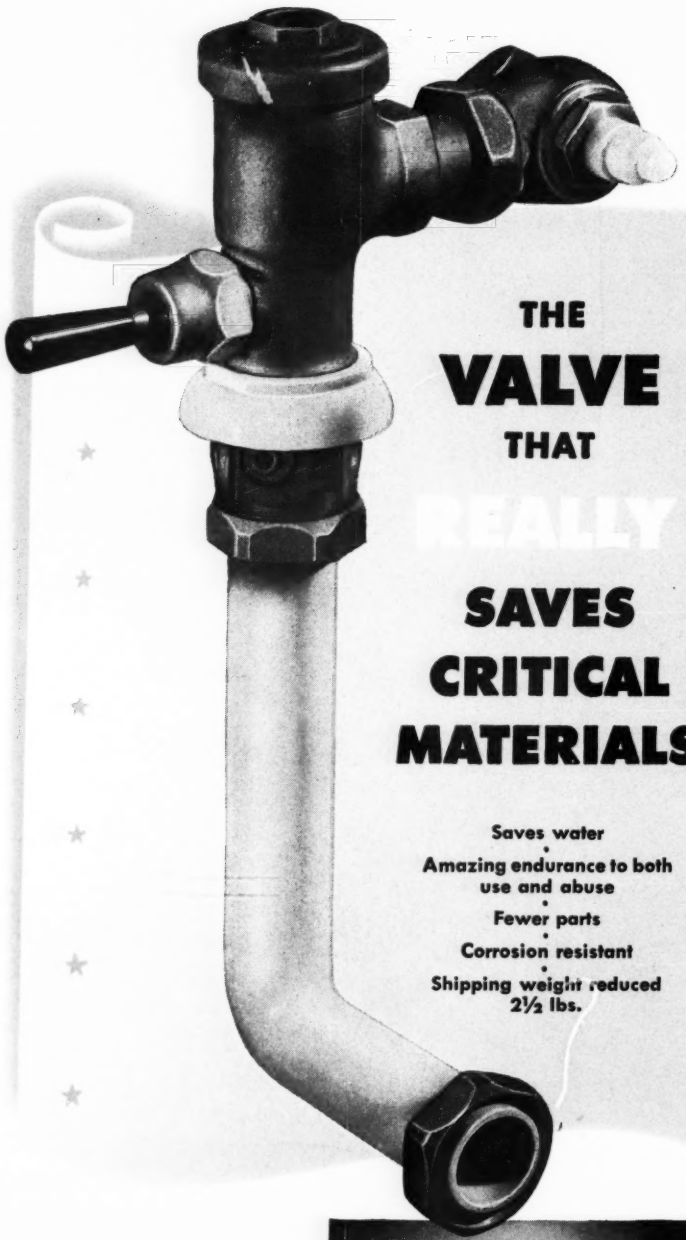
PROMPT DELIVERY!

COMPLETE RANGE OF SIZES: 75 TO 1200 POUNDS PER HOUR

Government rulings restricting fuel oil deliveries mean that most commercial and industrial oil burners must be converted to coal. Fuel oil users in your community need your assistance . . . offer you an immediate opportunity to cash in on the greatest demand that has ever existed for commercial and industrial stokers! Go after this business with Freeman: a tried and proven product that is first choice of America's foremost heating engineers. Freeman is backed by many years of satisfactory performance. Freeman has thousands of installations throughout the world; is manufactured by a pioneer leader in the stoker industry, rated AAA 1, established 1864. Write immediately for details on your territory.

FREEMAN STOKER DIVISION, ILLINOIS IRON & BOLT CO.

GENERAL SALES OFFICES: 918 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS



THE VALVE THAT REALLY SAVES CRITICAL MATERIALS

Saves water

•

Amazing endurance to both use and abuse

•

Fewer parts

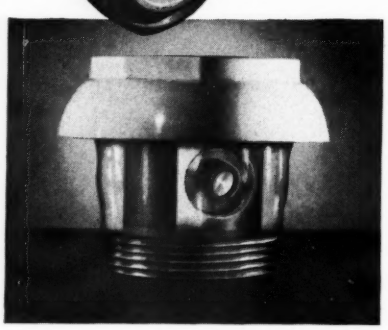
•

Corrosion resistant

•

Shipping weight reduced 2½ lbs.

The new Victory Vacuum Breaker is all-plastic; its transparent outer-shell affording *visual* inspection. Instantaneous in action, it prevents back-syphonage and so protects health.



The War Department Specification (PE-623) and Federal Specification (E-WW-P-541a) permit the use of 2¼ lbs. of copper-base alloy, and the Sloan Valve Company has complied with these specifications since their inception in June and July, 1942. However—fully realizing the need for critical copper in the war program, Sloan engineers greatly bettered this limit. ***The new Victory valve uses less than four ounces of copper***—which, based on present production, means an annual saving of 4,406,000 lbs.

This amazing reduction in critical materials was brought about through the substitution of plastics and malleable iron. Furthermore, the use of these substitute materials has appreciably reduced the number of parts, and the new valve is 2½ lbs. lighter in shipping weight. All parts have been thoroughly field tested, and the complete valve has undergone laboratory accelerated-time tests equal to 10 years normal service, after which the Victory valve was still working perfectly and without need for repair.

While the new Victory Vacuum Breaker is all-plastic, no change was made in the functional design of the original Sloan V-100-A, which was the first vacuum breaker to be approved by the N.A.M.P. Testing Laboratory at the University of Iowa. Its outer-shell, now of transparent plastic, permits *visual* inspection, thus assuring the ultimate in protection against back-syphonage.

SLOAN VALVE COMPANY
4300 West Lake Street
CHICAGO

SLOAN *VICTORY TYPE* FLUSH VALVES

Wilmington . . .

(Continued from Page 58)

Plumbing and heating installations in the Annex project cost $75,000, of which $35,000 was for plumbing. There is an individual lavatory and shower room in each of the five dormitory buildings. Shower installations in the five structures total 100 (one shower room for each building, on the basis of one shower for every 10 men).

Plastic and other substitutes used for materials difficult to obtain represent about 65 per cent of the smaller items used in the plumbing installations in the Annex. Howe Bros. made liberal use of plastic fixture handles, plastic shower heads and flush valve tail spins, and black iron pipe wherever possible instead of galvanized pipe.

The five dormitory buildings in the Annex are heated by 20 forced warm air oil furnaces. Four such furnaces are installed in a furnace room in each building. Installation was by J. Herman Co., Los Angeles. Capacity of the furnaces is 250,000 Btu each and they handle 3,000 cfm per furnace.

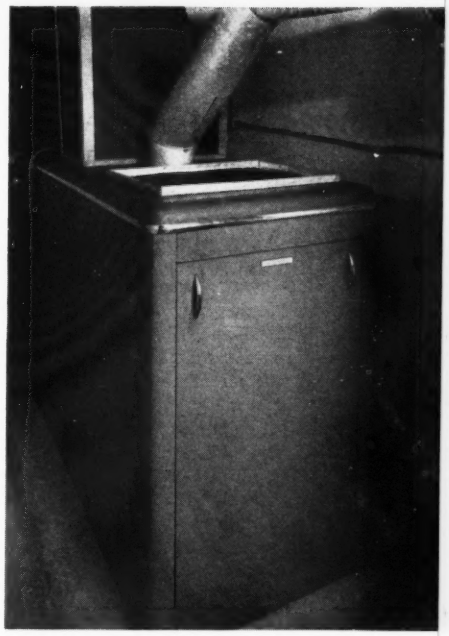
AUTOMATIC HEAT and AIR CONDITIONING Section

The two-story dormitory group is designed in the form of a central unit with four wings extending therefrom. Ducts from each furnace room run down the corridors, with lateral ducts leading to the rooms. Here, too, asbestos ductboard was used, except in the fan rooms, where metal ducts were installed.

The Community Center group of buildings, around which the dormitories are placed, consist of the largest and structurally the most permanent part of the project. The Community Center group is suitable for retention for recreation and welfare use after the war. The center provides complete facilities for the 3,000 men who are housed in the dormitories in adjoining blocks.

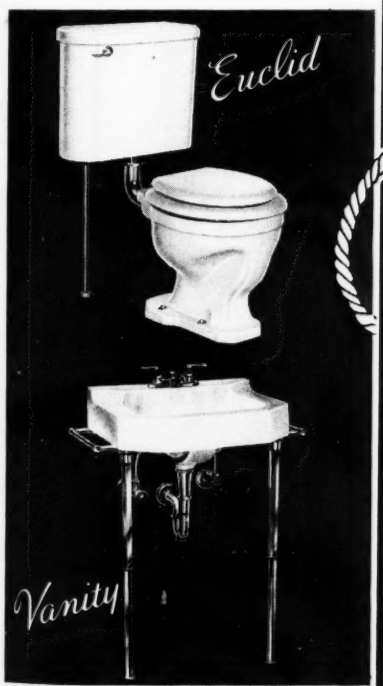
The Recreation Building houses an assembly hall and lounge, library and game rooms, with connecting pergolas enclosing an open area for sports. It

(Continued on Page 108)



This photograph shows one of the 100,000 Btu per hour oil-burning furnaces installed in the Wilmington Hall project. Note the use of non-critical materials for the duct work

AS ADVERTISED IN "HOUSE AND GARDEN" AND IN "HOUSE BEAUTIFUL"



DISTRIBUTION CONFINED TO EAST OF THE MISSISSIPPI RIVER

A LINE WORTH

MANSFIELD
Quality
VITREOUS CHINA

Full Value . . . Advanced Styling . . . Lasting Quality . . . Popular Priced . . . Nationally Advertised . . . Liberal Selling Aids . . . Wide Consumer Acceptance—These, and many more features make the Mansfield Line attractive to our dealer outlets. Your jobber's salesman will gladly give you the whole story.

Write for our newest catalog today!

MANSFIELD SANITARY POTTERY, INC.
PERRYSVILLE - - - OHIO

CASH-IN ON ITS GROWING POPULARITY AND LIBERAL DEALERS HELPS

THE MANSFIELD LINE IS BEING DISPLAYED BY YOUR JOBBER

News of Contractors . . .

59th Mo. State

One hundred and seventeen registered representatives of the various branches of the plumbing and heating industry met at the Hotel Governor, Jefferson City, March 20 and 21 for the 59th annual convention of the Missouri State Assn. of Master Plumbers. The well arranged program included talks by NAMP Pres. T. W. Merryman, Gov. Forrest C. Donnell of Missouri, and Wilbert Gregory, general organizer of the United Assn. of Journeymen Plumbers.

D. C. Cunningham, St. Louis, was elected president. First vice president will be S. S. Harter, Crystal City. Robt. W. Scheer, St. Louis was chosen 2nd vice president and John H. Weiler, St. Louis, is treasurer.

The following committees were appointed by State Pres. Chas. F. Herr of Kansas City: credentials, Harry Satterlee, Joplin and Alex B. Melville, St. Louis; auditing, D. C. Cunningham, St. Louis; J. S. Levene, Kansas City; B. C. Neely, St. Joseph; resolutions, Oscar Sutter, St. Louis County; Syl. Harter, Crystal City; Emil Rohut, Kansas City; Phil Miller, St. Louis County; sergeants at arms, W. J. Thole, St. Louis and Milton Kopff, St. Louis County. (Photos taken at meeting shown below and on Page 80).

Ladies' Night

The third annual Ladies' Night banquet of the Automatic Heating Contractors Assn. of Philadelphia was held recently with 100 per cent membership in attendance. Toastmaster Charles Kaufman presented the following speakers: Fred Kennedy, Phil Hering, Jos. McStacy and Tom Craige. Retiring Pres. Walter Raid was presented with a gift. The ladies received flowers and gifts. The evening's entertainment consisted of cards, dancing and singing.

N. H. Meeting

J. Vincent Moran was elected president for a third successive term at the 13th annual meeting of the New Hampshire State Assn. of Master Plumbers, held at the Hotel Carpenter, Manchester. Other officers reelected were Harry D. Bunker, North Conway, vice president; Philip A. Lanoie, Goffstown, secretary and treasurer; and Joseph L. Greenwood, Bristol; Maurice Silsby, Newport; John H. Martin, Milford; and John H. Simpson, Durham, directors.

Among the speakers at the meeting were past Pres. Joseph L. Greenwood; James A. Milne of Pittsfield, Mass., a director of the NAMP; and Robert Dick, Lead Industries Assn. One feature of the program was the showing of the plumbing industry motion picture, "The Ominous Arms Case."

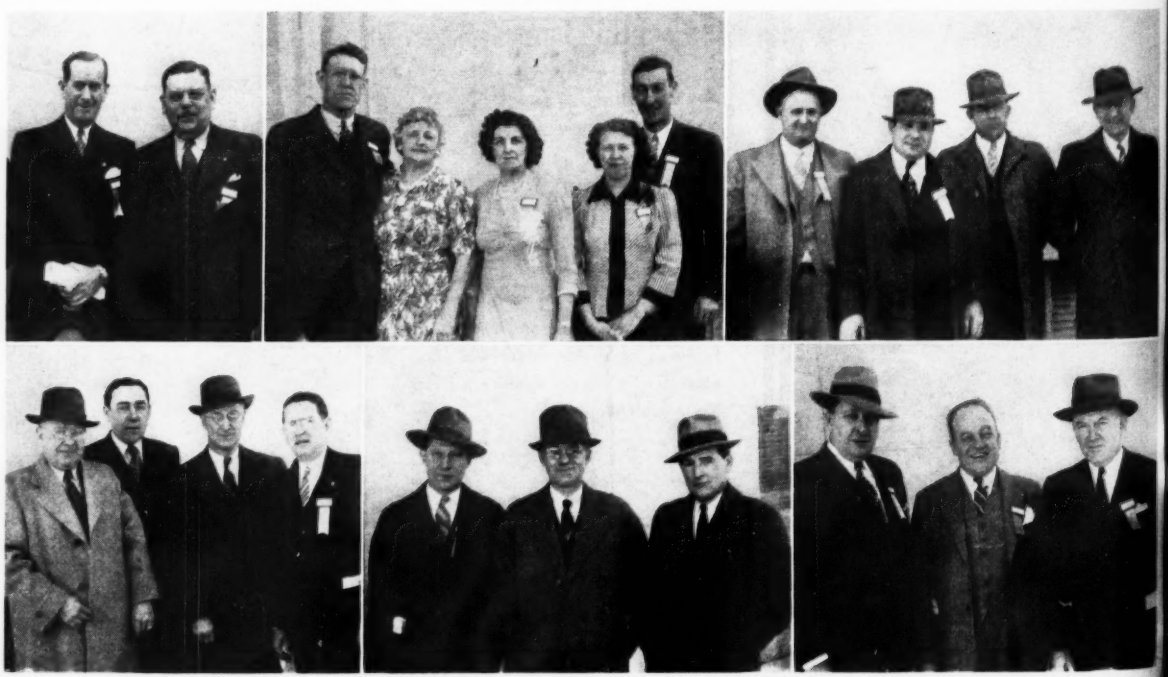
Maine State MPA

The Main State Master Plumbers Assn. held its 50th annual convention at Lewiston, March 9. Ralph L. Clarke, Rumford, was elected president and Victor V. Larrabee, Belfast, was chosen vice-president.

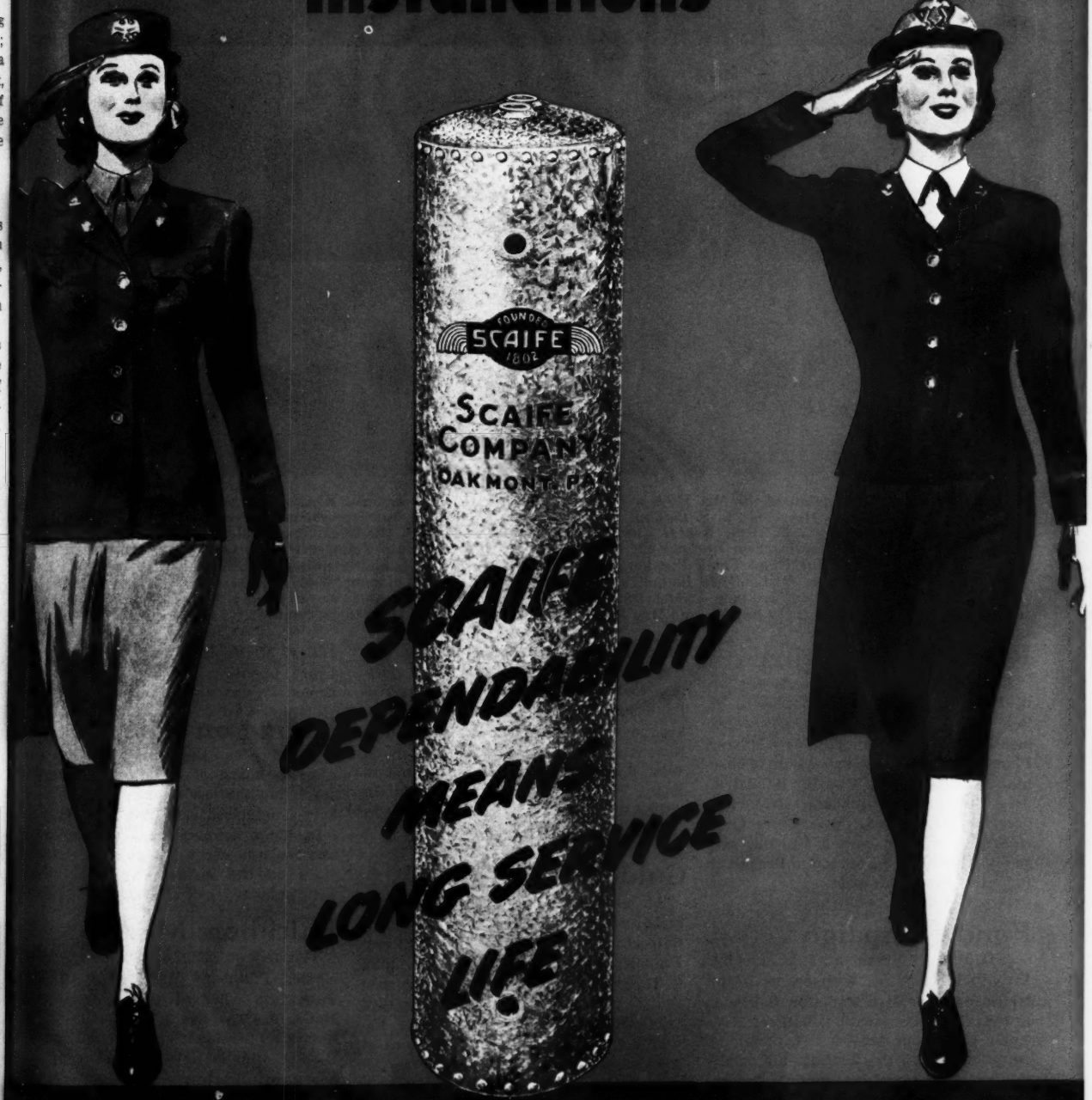
Among the convention speakers was George A. Partridge, engineer from the WPB, who stated Maine was ahead of the other New England states in conversion from oil to coal. This was due, he said, to an earlier start and intelligent efforts by state officials. The result, he stated, may be that many heating plants that converted to coal will continue to burn coal after the war.

Frank S. Hoy, local newspaperman, discussed the public's desire for knowledge about substitutes for materials now unobtainable. He also advised 'intelligent use' of advertising.

Among those attending the 59th annual convention of the Missouri State Association of Master Plumbers were, top row, left to right: T. W. Merryman, national president; Frank H. Pierson, president, Iowa; J. C. Berringer, Mrs. Edw. Donnelly, Mrs. J. C. Berringer, Mrs. L. C. Dean and L. C. Dean, all of St. Louis County; P. L. Miller, P. Perry, J. Joos and M. W. Kopff, also of St. Louis County ● Bottom row: A St. Louis group consisting of Reno Ivy of American Radiator and Standard Sanitary Mfg. Co.; Frank Thiel; Jos. A. Sheehan, and Leo Filstead, general manager of John C. Kupferle Foundry Co.; S. S. Harter, 2nd vice president from Crystal City, Mo.; M. A. Andrews, Illinois president; Thos. J. Gannon, chairman of board of directors of state association, St. Louis; Wm. Brookman, Illinois secretary; Jos. R. Knapp and John Ney, both of the American Radiator and Standard Sanitary Mfg. Co., St. Louis



Protecting your Range Boiler Installations—

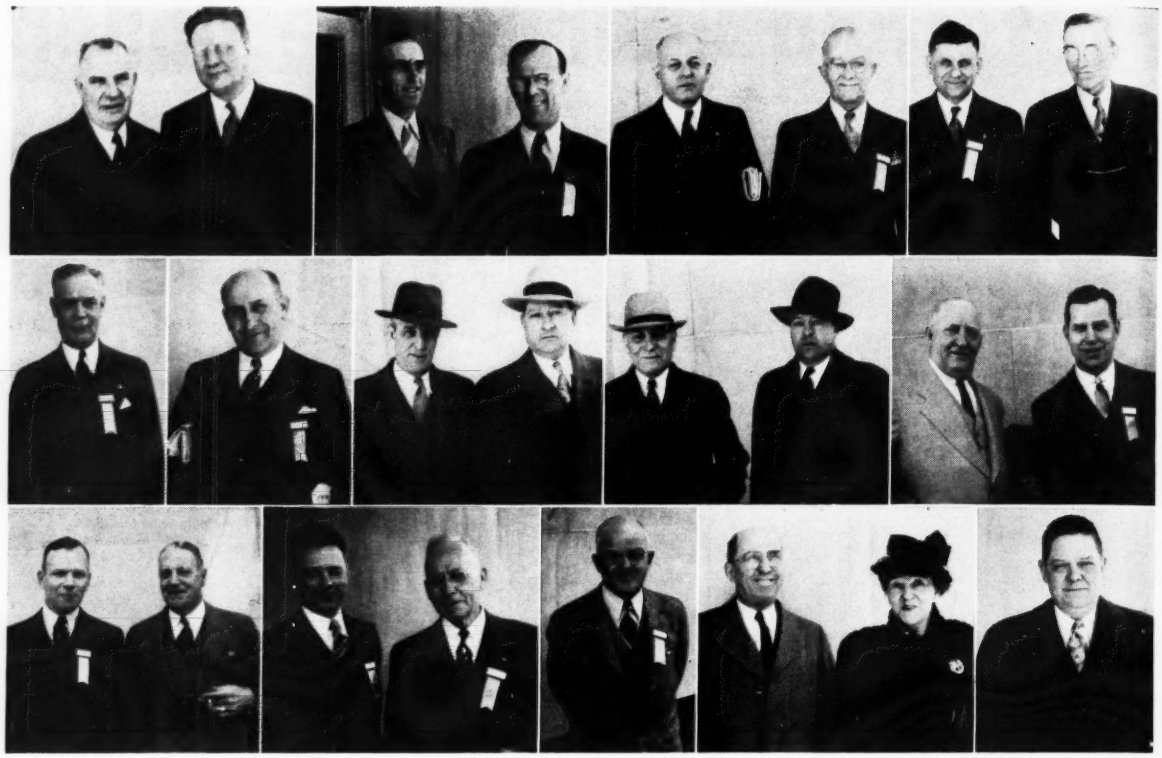


SCAIFE RANGE BOILERS

SCAIFE COMPANY

eneral Offices and Works: OAKMONT (Pittsburgh District), PA.

REPRESENTATIVES IN PRINCIPAL CITIES



At the 59th annual convention of the Mo. MPA were, top row: W. V. Mallen, secretary Kansas City Association; Gus Nottenberg, Kansas City; Mort Jacobs, Overland; L. F. Ballard, Florissant; J. S. Levene, past state president, Kansas City; D. C. Cunningham, new president, St. Louis; C. F. Heer, Kansas City, retiring state president; C. E. Cook, Springfield, state director ● Second row: Harry R. Satterlee, Joplin; Sam Burman, St. Louis; Wm. A. Ries, American Foundry & Mfg. Co.; Edw. Donnelly, United Assn., St. Louis; John Heinkel and Frank Fletcher, manufacturers' agent, St. Louis; Stephen H. Gilmore, St. Louis, manager, Kohler Co.; Fenton Fowler, St. Louis ● Bottom row: Fred Praechter, Jr., St. Louis; Wm. J. Hebenstreit, Kansas City, Sloan Valve Co.; Lester P. Hunstein, assistant secretary, St. Louis; Fred J. Praechter, past state president; Paul J. Schultz, Jefferson City; Mr. and Mrs. J. S. Malone, St. Louis; Wm. J. Thole, St. Louis

Richmond Meeting

The installation of new officers by R. H. Griffin was the main feature of the business session of the regular meeting of the Richmond (Va.) Master Plumbers and Heating Assn. Those taking office were Claude B. Allen, president; R. B. Ingham, Jr., vice-president; Horace A. Carter, secretary-treasurer, and Andrew J. Harton, sergeant-at-arms. Retiring President Beverley gave his report.

Fund Campaign

J. L. Murphy, president, J. L. Murphy, Inc., and Henry L. Weimer, assistant treasurer, American Radiator & Standard Sanitary Corporation, both of New York City, represented the plumbing contractors and the heating, air conditioning and plumbing manufacturers, respectively, in the Red Cross War Fund Campaign which opened in New York on March 1.

West Phila.

The West Philadelphia MPA held its dinner meeting at the Hotel Philadelphia recently, with 54 in attendance. The guest speakers, Dan Cohen and W. Robinson of the local plumbing inspection department, spoke on the activities of the department and the existing working conditions. President Milligan read letters from members who are now in the armed forces. Walter Ross read the original by-laws of the old West Philadelphia association, made in 1900. The president appointed Martin Miller to report on group insurance at the next meeting.

Golden Gate ASHVE

An unusually heavy attendance featured the March 3 meeting of the Golden Gate chapter of the ASHVE held at San Francisco's Bellevue Hotel. Pres. John F. Kooistra presided. The speaker was W. B. Van Arsdel, Chief of Eng. and Dev. Division, Western Regional Research Laboratory, U. S. Department of Agriculture, Albany, Calif.

N. C. Elections

In a reorganization of the board in connection with semi-annual examination of applicants at Greensboro recently, the North Carolina State Board of Examiners of Plumbing and Heating Contractors elected the following officers: W. H. Sullivan, chairman; L. L. Vaughn, vice-chairman; L. P. Laschall, secretary and treasurer; R. H. Haley, R. V. Sisk, and J. M. Jarrett, board members. W. F. Morrison continued as executive secretary.

Ruling on Pipe

A ruling has been passed by the Los Angeles Board of Building and Safety approving the use of extra length, hard burned unglazed clay pipe for 6 in. and 8 in. house connections. Also approved was the use of sewer pipe with ceramic glass on the inside of pipe equipped with standard bell and spigot points.

Baltimore MPA

The new regime of the Progressive Master Plumbers' Assn. of Baltimore went into office at the meeting held March 9. The list is headed by J. M. Cuffley as president succeeding Leon W. Walker who is now a member of the board of directors. The rest of the ticket is composed of William A. Ganley, first vice president; Samuel Hankin, second vice president; Joseph Walpert, treasurer; George W. Herr, recording secretary; Andrew Kral, financial secretary; John A. Murphy, corresponding secretary; and Julius Valentine Lebrell. The board of directors, in addition to Mr. Walker, is comprised of Thomas F. Ryan, William P. Marek and James P. Maguire.

Conversion Basis . . .

(Continued from Page 69)

fuels, as they relate to the conversion of oil-fired plants to coal-fired plants.

The *physical state* of the fuels differs. Oil contains heat in the solid. This difference calls for consideration of storage space when conversion to coal is contemplated.

The *heat content* of the fuels differs. Oil contains heat in the amount of about 19,000 Btu per lb. Coal runs between 13,000 and 14,000 Btu per lb. This difference in heat content must be considered in order to correctly specify stoker capacities for installations previously burning oil.

Coal has a *mineral residue*—ash. Oil has none. This factor obviously influences firebox design, as there must be a place for the ash to accumulate and firebox doors provided for the removal of fused ash, or clinkers.

With oil firing, extreme firebox temperatures are desirable, even necessary, to adequately gasify the oil vapor injected into the firebox. This condition is *undesirable* with a stoker because of the difficulty in handling ash in the molten, unfused state.

It is difficult to draw a parallel between the two fuels, as affected by firebox temperatures, except to say that with oil it is advantageous to have the *entire* firebox extremely hot, while with coal it is best to localize, as much as possible, the extreme temperature to the *upper* part of the fire and to the combustion space which is *above* the fire bed. Thus, a condition favorable to the solidification of ash into easily handled clinker is approached.

The fact that coal contains ash is the reason behind the major difference in details pertinent to the conversion of oil-firing to coal-firing. The presence of ash demands a firebox design for stokers which is not consistent with oil burner practice.

Reviewing then, the differences between oil and coal are the *state* of the fuels, the respective *heat contents* and the presence of *ash* in coal.

In figuring a conversion job the difference in heat content of oil and coal can be adjusted by the following simple calculation:
19,000 (Btu per lb of oil) × 7 (lb per gallon) = 133,000 Btu per gallon.

Coal runs between 13,000 Btu and 14,000 Btu per lb. Therefore, taking 13,300 Btu as a commonly found heat content—
13,300 (Btu per lb of coal) × 2,000 (lb per ton) = 26,600,000 Btu per ton of coal
26,600,000 (Btu per ton of coal)

133,000 (Btu per gallon of oil)
= 200

The heat content of one ton of coal is thus equal to that of 200 gallons of oil.

This conversion factor of 200 can be used in sizing a stoker to replace an oil burner of any given capacity. It is important to remember that in sizing a stoker, that is, in selecting capacity for a given load, do *not* figure the stoker to run continuously. Figure the stoker size for a maximum operating time of 70 per cent.

Here is a typical example of how to select a stoker to replace an oil burner using 10,000 gallons per year:
10,000 (gallons of oil per year)

---

200 (factor for converting gallons of oil to tons of coal)
= 50 tons of coal per year
50 (tons of coal per year) × 2 (factor for converting to lb per hr) = 100 lb per hour.

Therefore, a stoker with a capacity of 100 lb of coal per hour should be selected to replace the oil burner.

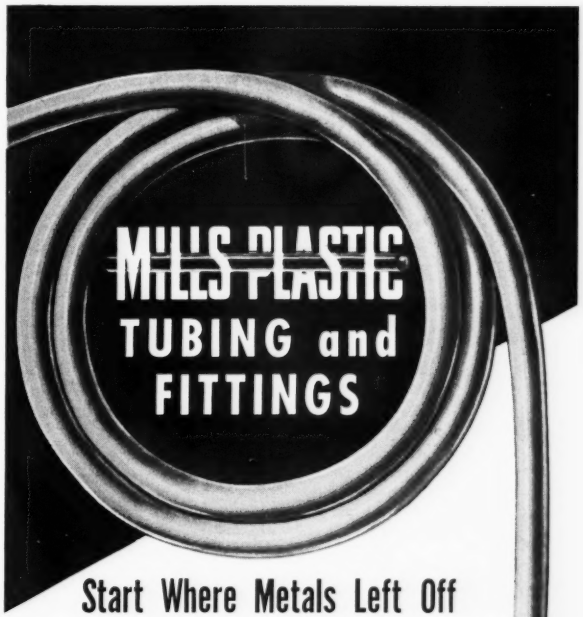
The above quick method is a bit too brief for good stoker engineering practice. It does not take into consideration that the 10,000 gallons of oil previously used may be too much, because of inefficiency in operation. Or, they may be too few to furnish a satisfactory amount of heat. The accurate method is to start from scratch, using the installed radiation as a guide to the size of stoker required.

Assume that 3,000 sq ft of steam radiation are installed. (1 sq ft of steam radiation emits 240 Btu per hour.) The calculation is as follows:
3,000 (sq ft radiation) × 1.33 (factor for piping loss and boiler pickup) = 3,990 sq ft edr (equivalent direct radiation).
3990 (edr) × 240 (Btu per sq ft per hour) = 957,600 total Btu per hour required.
13,300 (Btu heat content per lb of coal) × 0.65 (usual over-all plant efficiency) × 0.70 (stoker operating time) = 6051 available Btu per hour per ton of coal
957,600 (total Btu per hr reqrd.)

6,051 (available Btu per hour per lb of coal)
= 158 lbs of coal per hour—required capacity of stoker.

This about sums up the general principles of conversion from oil-firing to coal-firing. It is obvious from the foregoing that between oil and coal there is little basic difference in the combustion problem. The procedure of a heating survey or determining building heat loss is standard for both fuels. And the calculations required to properly size a stoker for conversion purposes are simple.

Installation details, such as firebox construction, electrical controls, etc. are merely a matter of consulting stoker manufacturers' directions and instruction manuals.

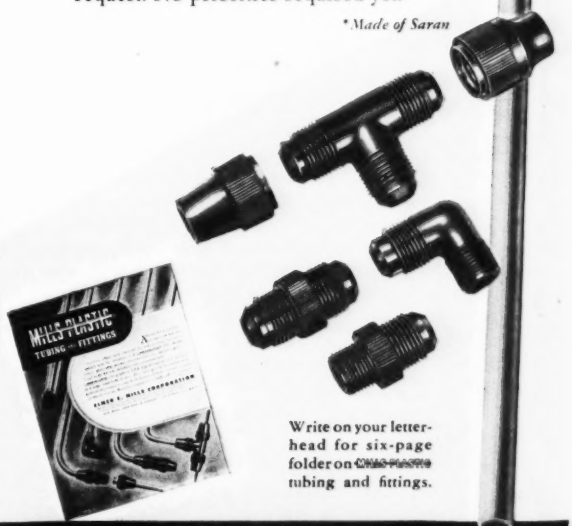


Start Where Metals Left Off

● The combination of MILLS PLASTIC* tubing and fittings, first used as replacements for vital metals converted for war purposes, have stepped far beyond other materials because of their unusual characteristics and qualities . . . resistance to most chemicals, extreme flexibility, adaptability to high and low pressures, ease of handling.

MILLS PLASTIC tubing and fittings are now available in sizes from 1/8" to 3/4". Tubing comes in coils of 25 ft., 50 ft. and 100 ft. in several wall thicknesses. Special sizes or coil lengths available on request. No priorities required yet.

*Made of Saran



Write on your letterhead for six-page folder on MILLS PLASTIC tubing and fittings.

ELMER E. MILLS CORPORATION

Molders of Tenite, Lumarith, Plastacele, Fibestos, Lucite, Crystallite, Polystyrene, Styron, Lustron, Loalin, Vinylite, Mills-Plastic, Saran and Other Thermoplastic Materials

814 WEST VAN BUREN STREET • CHICAGO, ILLINOIS

SAFEGUARD
your
REPUTATION
As a plumbing and heating contractor you have a definite obligation to your customers in every service you perform for them. Whatever equipment or materials you install for them, their personal welfare is in your hands. They rely on your ability to select these wisely, to their best advantage.
No matter how large or how small the job may be, the selection of pipe should get first consideration. For such selection may mean the difference between profit and loss on the job and upon such selection largely depends your prestige. One faulty piping job can tear down in a day, a reputation it may have taken years to build.
When you specify PITTSBURGH Tube you take a vital step toward safeguarding your reputation. You reduce installation costs perceptibly and at the same time substantially increase your earnings per job. Decide now to specify PITTSBURGH Tube on all of your piping jobs.
PITTSBURGH TUBE COMPANY
PITTSBURGH
PENNA.

McDonnell on Postwar

(Continued from Page 55)

servation that when people want something enough in this country they get it—clear down to the humblest home owner. Such is the ingenuity of U. S. manufacturers that they manage to give the public what it wants at a price it can afford to pay.

So I think that when the victory is won there will be not only freedom from dire want, but actually some gratification of wants that are somewhat on the luxury side. After all, yesterday's luxury is today's necessity anyhow! This means that we of the heating industry will have to give the postwar world the even, automatically controlled, heating and proper air conditioning that people are learning to demand. What form will it take?

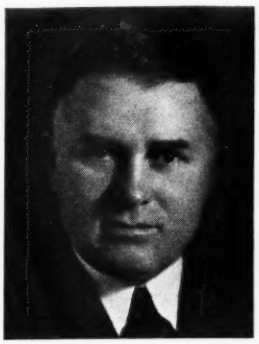
As I said a few paragraphs back these first surmises as to what the public will want, and what the heating industry must give it, were made without regard to the competition between **kinds of heating.** But if the good old free enterprise system continues in postwar days, you can be sure that there will continue to be a clash between the warm air and the hot-water-and-steam camps. You can be sure that each camp will claim that it has the royal road to ideal heating and air conditioning. Naturally, I have my own opinion on this question.

Despite individual opinion, however, I think all men in the heating industry should look all the facts in the face, fairly and honestly. I think they should be ready to see the shortcomings of their own kind of heat as well as the other fellow's kind. Only by seeing the faults can we correct them. Only by getting the whole matter into the light of day can we find out where we stand and where we're headed in postwar days. There is no use fooling ourselves and there is no use being fooled by others, either. I have seen the results of many tests made on both types of heat; and apparently each is best, depending on which camp does the testing. If there has been any complete series of tests run under absolutely identical conditions I have not heard about it.

As a matter of fact, I believe there must be merit to both forms of heat or one would have crowded the other out of the picture long ago. Properly developed, either form is probably capable of far better results than either has achieved up to this time. Since both have their merits, the ultimate achievement of either will depend, first, on how much smart engineering goes into their development; and second, on how skillfully their accomplishment is sold to John Public!

Give the former objective—the engineering development phase—all you have, but don't overlook the latter—the importance of selling the achievements **hard.** It doesn't take an expert statistician to prove the importance of the selling, the merchandising angle.

I think there is plenty of future for our old friend



E. N. McDonnell

"piped" heat in post-war days if we develop it properly, and then tell and show the public what we have. What form the development will take is difficult to predict, but I expect to see well-controlled forced hot water become a predominate type of heating in smaller dwellings. In connection with this type of system, great strides in the direction of metal saving, quick response and close control have been obtained through small piping and small radiators fed with high temperature water. But I would like to suggest also the possibility of an opposite trend to more radiation and less temperature.

Just what form the heating elements would take I can only guess. Maybe they would be on the order of panel heating, but more in package form.

This possibility is suggested in order to emphasize that we can never safely rest on past achievements; we must continue to develop, product-wise, along practical smart-thinking lines.

I expect in the postwar days to see a **continuous** type of heating and therefore a better control with less overshooting, hunting, and hot and cold spots. I expect to see the manufacturers of primary heating sell a more complete and engineered package to the contractor. This is almost a must.

There is one thing about space heating you can't get away from: In any form it is a long way from perfect; so we will be working in an up-

ward direction for a long time to come! There will be a lot of knock-down-and-drag-out arguments along the way, but that's what makes it worth the price of admission. I'm grateful to be a part of this industry, partly because one never knows what's going to happen next, but mostly because it has a tremendous responsibility and a glorious opportunity — now and when the victory is won.

Dolan and Olson . . .

(Continued from Page 56)

in putty, lard oil, pipe, fittings, valves, gaskets, etc., instead of the grease paint, costumes and scenery of the stage.

As near as I could make out, this is about what was passing over the wires:

"Yes, Mrs. Gustafson, this is 'Dolan and Olson's Plumbing Shop, but Hank—I mean Mr. Olson—is out of the office right now and if you will leave your number, I'll have him call you as soon as he returns.'"

"All right," countered Mrs. Gustafson, "But I just want to tell you what has to be done. You see the lavatory isn't working right. It was out of order a few weeks ago and my brother Pete fixed it. You know he isn't a plumber, but he can do anything. It didn't work after that and so my husband fixed it, and still it didn't work, and here it is Friday afternoon and the Ladies Aid Society is going to meet here tomorrow to make plans for a smorgasbord, and it just has to be fixed, and my brother Pete and my husband are going ice fishing tonight and so they can't fix it again and if they did fix it, it wouldn't be fixed anyhow, and I know it is getting late, but Mr. Olson is such a good man and such a good friend to my brother Pete and my husband, they belong to the same Lodge, but they never go to meetings and they used to belong to the same singing society, and they sure could make a lot of noise and it sounded good, too, and they even wrote a song and it was pretty good, too, and maybe you heard it on the radio.

"It went something like this, 'The heel of the Hun is lifted and the Viking is singing again'. Isn't that just fine and they made it up right out of their own heads, and they never studied music or poetry or anything like that in school. In fact, they never went to school very much. Just a few years in the Old Country and when they got over here my brother Pete and my husband, only he wasn't my husband then, they got a job working for Jim Hill on the railway, but Mr. Olson didn't like to work too hard, as he got an easy job digging holes for Mr. Kelly the plumber and pretty soon he was a plumber, and now I hope you'll tell him everything that I said and be sure and have him come over as soon as he gets back, and it won't take very long, because my brother Pete and my husband both fixed it in just a few minutes, and it won't take very much gasoline because it is almost on his way home" . . .

"Yes, Mrs. Gustafson. Sure, I'll tell him everything."

Well, finally Broadway managed to get the phone number and the address, and hung up the receiver with a sigh, and then remarked, "On the stage, the actors used to do the talking, but on the telephone the lady has the first word, the last word and a lot of words in between."

Just then Hank phoned in and Broadway gave him a condensed version of Mrs. Gustafson's message, with particular emphasis on the fact that the lavatory was not working right, and Hank said that he would drop by there because he was out in that vicinity anyhow.

Me and Broadway chinned for awhile and then Hank came in.

Broadway wanted to know if he had stopped at Mrs. Gustafson's and Hank says, "Sure, I stopped there and asked her what was the matter with the lavatory, and she showed me the water closet, and it sure was out of order all right, but the lavatory was OK. Seems that her brother Pete and her husband between them had installed a new rubber tank ball and they had got the biggest one "that place" had on the counter because they wanted to get their money's worth. It was too large, and the guide had been pulled to one side so that the ball wouldn't seat even if it was the right size. And the float valve was leaking because they had used a piece of an old inner tube to make a gasket, and the lever was so long that the water was too high in the tank, even when they did press the tank ball in place by hand. All in all, it was a mess, but it's OK now."

And then Broadway yelped, "She spent twenty minutes telling me that the lavatory was out of order and you find that it was the water closet tank. Some order taker. That's me."

Well, even some of us old timers get fooled on that one and that is one reason why we send out "service cars" with a complete assortment of tools and repairs.

The guy with the wrench

No piece of heavy artillery ever did a more vital war job than a plumber with his simple tools. When boys started pouring into our army camps, it was the plumber who first had to guarantee the sanitary conditions that would prevent a catastrophe.

Today, on the home front, the same guy with the wrench is making the best of substitute materials, inventing new ways to patch up what he can, and working every day for Victory.

He may not be a glamor boy, this guy with the wrench—but we'd play hell and get along without him.

Boiler drains, stops and wastes, stops and sill cocks can be furnished with a priority of AA5 or better.

Available Now
V 1105 Tray Plug — Steel non-critical stopper 2½"; 4" tailpiece with galvanized finish.
V 1106 Strainer — Steel 2½"; 9" tailpiece galvanized finish.
V 935 Deck Type Faucet — Plastic escutcheon and handles, steel spout, cast iron body—brass stem and seats.
Conforms to F. P. H. A. specifications.

SCHAIBLE

...COMPLETE LINE OF APPROVED PLUMBING ACCESSORIES FOR WAR-TIME NEEDS.

1086 SUMMER ST., CINCINNATI, OHIO

Engr. Standards

Now available is Part I of the fourth edition of the Engineering Standards which covers heat loss calculations. This booklet was developed by the committee on standards of the Heating, Piping and Air Conditioning Contractors National Assn.

It will be noted that the coefficients of transmission for the various materials used in building construction, both simple and compound, have been compiled by the Guide publication committee of the ASHVE. These factors are based on studies made at the research laboratory, have been carefully checked and rechecked, and are used in this book with the approval of the ASHVE.

To illustrate the extent of the research which formed a basis for the standards, the foreword to the booklet points out "To transpose wind velocities into equivalent temperatures, there are available a series of careful tests which showed, at a velocity of 15 miles per hour, the wind velocity at which our coefficients of transmission are all determined. . . ."

Sales Tax Refund

In reference to claims for an approximate $250,000 refund of sales tax now pending in the Supreme Court, H. P. Reger, chairman of the Special Sales Tax Committee of the Building Construction Employers Assn., states that his committee is endeavoring to arrive at a settlement with the State Department of Finance rather than go to court. In the latter event, each claimant would have to prove up his individual case and his right to a refund. Plumbing contractors of Chicago and the state of Illinois have claims for refund approximating over $100,000. Mr. Reger believes it would be better to accept a compromise settlement now, rather than engage in long litigation. In previous suits, several hundred thousand dollars for contractors in Chicago and Illinois have been recovered by the committee.

1943 Officers

The Master Plumbers Assn., Inc., of Montclair, Bloomfield, Verona and Vicinity, N. J., elected John Joyce president at its January meeting. Al Kievit, vice-president; Howard Barton, treasurer; Chas. J. Samuel, secretary; Richard (Dick) Thompson, sergeant-at-arms, and Frank Lowe, trustee, are the other officers of the organization.

Receive Charter

The main feature of the regular meeting of the Camden, (N. J.) Co. Assn. was the presentation of the charter of the association showing the date of incorporation, 1898. Present, and still active in the business, were charter members Charles Brown, Robert MacIntosh, and Ernest Limroth. Robert C. Moir was elected director of the association to fill the vacancy left by the late Earl C. Lloyd. Mr. Moir and Sec. Bateson spoke on the coming state convention, May 14 and 15, at the Robert Treat Hotel, Newark. Other subjects discussed were conversion jobs, taxes, repairs, materials and plumbing codes.

Chicago PCA

The Plumbing Contractors Assn. of Chicago will hold its regular meeting April 13 at the Blackstone Hotel. Harry B. Greisbach, instructor of the plumbing class at Washburne Trade School, will be the guest speaker having for his subject isometric and plan drawing that is required under certain sections of the Chicago plumbing code.

Postwar Plan

Edgar E. McLain, president of the Assn. of Master Plumbers of the State of Maryland, Inc., announced that he is planning to inaugurate a new feature at the meetings. This will be an open forum discussion of "What about the future of the plumbing industry?" with the organization more than ever taking on an increasing importance. In his opinion the group can be made a vital factor in planning for the future and protecting the interests of the members.

L. A. Masters

The Los Angeles Merchant Plumbers Assn., with the assistance of the Women's Auxiliary, had 250 in attendance at its St. Patrick's Day dance. The purpose of the affair was to raise funds for the sending of packages to the 30 members and members' sons who are now in the armed forces.

Ominous Arms Case

Edward L. Penfrase, New York City, has announced two recent showings of the Ominous Arms Case, plumbing industry motion picture.

A New York presentation was to a crowd of approximately 200 in the Supreme Court Chamber of the Criminal Court Building. This was under the auspices of Jere L. Murphy and Morris Jarcho, both of whom devoted much time to the original fund promotion.

Comm. Albert H. Morgan, director of maintenance, New York public works, had the Ominous Arms Case shown for all the personnel of that organization and numerous other guests.

Obituaries

Frank B. Lent

Frank B. Lent, 50, nationally known plumbing contractor of Saginaw, Mich., died March 30.

Mr. Lent had served two terms as state president and four as local president; he was a director of the NAMP at the time of his death. Surviving are his mother, one brother and one sister.

W. P. Yooss

W. P. Yooss, vice-president of Federal Huber Co., Chicago, died March 4 at Orlando, Fla. He had been connected with the Federal Huber Co. for the past 45 years. Mr. Yooss is survived by his wife and one sister.

Harry C. Weiskittel

Harry C. Weiskittel of Baltimore, president of the stove and pipe manufacturing company which bears his name, died March 25. Mr. Weiskittel is survived by his wife, two sons and a daughter.

Bert K. Waits

Bert K. Waits, 52, secretary and purchasing agent of the Harry Cooper Supply Company, Springfield, Mo., died recently. He became associated with this company in 1910. Mr. Waits is survived by his wife, and his son and daughter.

Ralph B. Reedy

Ralph B. Reedy, president of the Reedy Company, Chicago, died recently. Mr. Reedy was a member of the Plumbing Contractors Assn. of Chicago and the Chicago Master Steamfitters' Assn. He is survived by his wife and daughter.

John T. McTigue

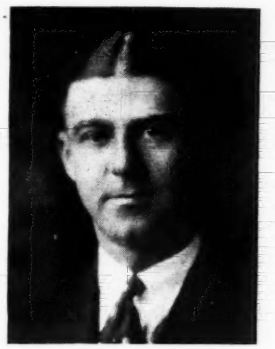
John T. McTigue, 79, Nashville, died March 24. For many years he was the head of the J. T. McTigue and Sons, contracting and engineering firm. Mr. McTigue was a former member of the City Council and Davidson County court.

George B. Ward

George B. Ward, 78, Wilmington, Del., retired plumbing and heating contractor, died March 4. Mr. Ward was a former president of the Wilmington Board of Health.

Frank F. Breyer

Frank F. Breyer, 74, former secretary of the Assn. of Master Plumbers of the State of Maryland, Inc., died recently. He is survived by his wife and daughter.



The late John J. Milliken whose obituary was carried in these columns in the March issue. Mr. Milliken, 46, represented Spang Chalfant, Inc., Boston, Mass., for the past fourteen years

Mathias Kinnen

Mathias Kinnen, 75, Rochester, N. Y., president of the plumbing firm of Kinnen, Marrot & Hebing, died March 8. He leaves a widow, three sons and two daughters.

Francis J. Schweihs

Francis J. Schweihs, Chicago, died March 7. Mr. Schweihs was a member of the Plumbing Contractors Assn. of Chicago.

Fred W. Balderson

Fred W. Balderson, 32, office manager of the Minneapolis-Honeywell Regulator Company's branch in Philadelphia, died recently. Mr. Balderson had been with the company twelve years. He is survived by his wife and infant daughter.

J. A. Reich

Joseph Abraham Reich, 53, West Orange, N. J., president of the Eastern Supply Co., died March 7.

Convention Dates

April 13 and 14—REMA—Annual meeting of the Refrigeration Equipment Manufacturers Assn.; to be held in Chicago with headquarters at the Palmer House.

April 19 and 20—VIRGINIA—Annual convention of the Virginia Associated Plumbing and Heating Contractors, Inc.; to be held in Richmond with headquarters at Hotel John Marshall.

April 27—MASS.—MPA annual business meeting to be held in Boston, at the Copley-Plaza Hotel.

April 27 and 28—NEW YORK.—MPA convention to be held in Buffalo, with headquarters at Hotel Statler; executive committee meeting on April 26.

April 28 and 29—MICHIGAN.—MPA convention to be held in Jackson, with headquarters at Hayes Hotel.

April 29, 30—CSA—Spring meeting of the Central Supply Assn.; to be held in Chicago, with headquarters at the Palmer House.

May 3 and 4—IOWA—MPA convention to be held in Cedar Rapids, with headquarters at Hotel Montrose.

May 4 and 5—INDIANA—Annual convention of the Indiana MPA; to be held in Indianapolis with headquarters at Lincoln Hotel.

May 10 and 11—COLO.—The annual convention of the Colorado Society of Sanitary and Heating Engineers; to be held in Denver.

May 12—CONN.—The annual convention of the Connecticut MPA, to be held in New Haven.

May 14 and 15—WASHINGTON—MPA convention to be held in Spokane, with headquarters at Spokane Hotel.

May 18-19—PA.—Master Plumbers Assn. of Pennsylvania; headquarters not yet announced.

May 21 and 22—OREGON—Annual convention of the Oregon Master Plumbers Assn.; to be held in Grants Pass with headquarters at the Redwoods Hotel.

May 21 and 22—NEW JERSEY—MPA convention to be held in Newark, with headquarters at Robert Treat Hotel.

June 7-10—NAMP—61st annual convention of the National Assn. of Master Plumbers, to be held in Chicago, with headquarters at the Morrison Hotel.

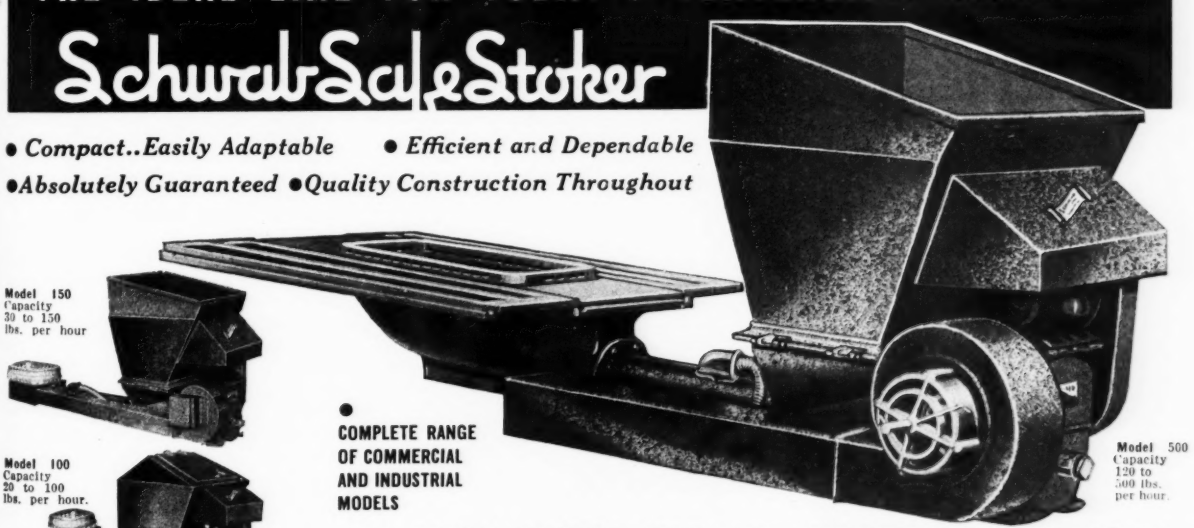
June 8-11—SMOKE PREVENTION ASSN.—37th annual meeting to be held in Pittsburgh, with headquarters at Hotel William Penn.

June 9 and 10—NDHA—34th annual meeting of the National District Heating Assn.; to be held in Pittsburgh with headquarters at Hotel Schenley.

THE IDEAL LINE FOR TODAY'S CONVERSION MARKET...

Schwab Safe Stoker

• Compact..Easily Adaptable • Efficient and Dependable
• Absolutely Guaranteed • Quality Construction Throughout



• COMPLETE RANGE OF COMMERCIAL AND INDUSTRIAL MODELS

ALL SIZES READY NOW FOR IMMEDIATE SHIPMENT!

Your SCHWAB Safe Stoker can be delivered promptly . . . ready for quick installation. Because Schwab Commercial and Industrial models are so compact . . . so easily adapted to any type heating equipment . . . so carefully engineered . . . they require little advance preparation, and make your conversion change a comparatively simple task.

SCHWAB Safe Stokers are scientifically designed and built completely from start to finish in our factory. Every piece is carefully engineered and quality-built for long, trouble-free service. SCHWAB Stokers, with their long and enviable record in the field, will help you get more than your share of the commercial and industrial market today. Write or wire now for details.

The Schwab Safe Company LAFAYETTE, INDIANA

Manufacturers & Wholesalers

Unit Heaters

At the seventeenth annual meeting of the Industrial Unit Heater Assn., held in Detroit, March 10, the following officers were elected: C. E. Scott, president; E. W. Petersen, vice-president, and L. O. Monroe, secretary-treasurer.

E. Trade Golf

The regular annual meeting of the Eastern Trade Golf Assn. was held February 17 at the Murray Hill Hotel in New York City. Fifty members and guests were present. Pres. Walter E. Heibel presided over the business session.

Election of the 1943 officers resulted as follows: Llewellyn Power, president; George F. Sheehan, vice-president; R. G. Bookhout, secretary-treasurer; J. Barton Garfield, captain; Francis A. Murray and Thomas M. Kellogg, members of handicap committee.

Other elections placed Walter E. Heibel, Charles S. Wood, Arthur F. Hinrichsen, A. G. Mohrman, and George Allen, Jr., on the board of governors. President-elect Power announced that the 1943 tournament committee would be W. J. Jackson, chairman; Charles M. Hunt, A. Engel and C. S. (Joe) Coleman.

It's "Major" Now!

Major Marshall (Warren Webster and Company) has been promoted from the rank of captain. He is still located at Wright Field in Ohio with the Air Corps Materiel Command.

Closet Flanges

The Lead Industries Assn. has adopted a standard specification for the manufacture of the new hard lead closet floor flanges, recently announced. Manufacturers are being licensed to use the Lead Industries' Seal of Approval on their flanges meeting this specification.

Important provisions of the specification are that the thickness of the outer rim of the flange must be ⅜ in. and the total weight of the flange must not be less than 1 lb. 9 oz. Originally, a heavier weight was announced, but refinements in manufacturing have made possible the reduction to a minimum of 1 lb. 9 oz. without reducing the thickness or strength of the flange. The composition of the metal is closely controlled by the specification.

News Briefs . . .

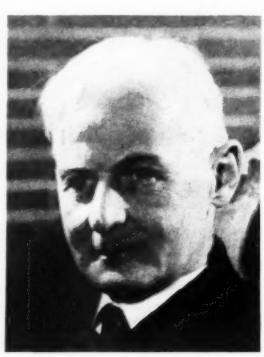
Carl H. Flink has been appointed technical secretary of the **ASHVE** according to an announcement by Pres. M. F. Blankin. Mr. Flink has 27 years of business and technical experience and joined the ASHVE in 1923. In his

Carl H. Flink

new position as technical secretary, he will be responsible for the coordination of technical committee work and assist in the compilation of codes and standards, working closely with the Guide publication committee.

Oscar L. Olson, vice president of the **Swedish Crucible Steel Co.**, Seat Division, Detroit, has announced the appointment of the Cowan Sales Co., Hudson Terminal Bldg., 30 Church St., New York City, as its new representative for the states of New Jersey and New York.

James R. McCallum has joined the engineering staff in charge of the laboratory of **Airtemp Division, Chrysler Corporation**, Dayton, according to a recent announcement by Allen P. Livar, chief engineer. Mr. McCallum has been associated with the Chrysler Corporation laboratories in Detroit for a number of years, where he has specialized in the development of refrigeration and heat transfer equipment.

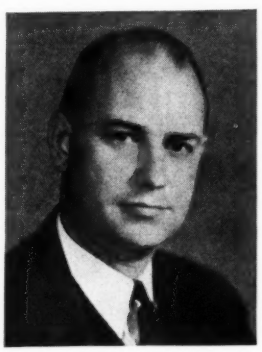


James R. McCallum

Tube Turns, Inc., Louisville, is to operate a $7,000,000 airplane parts factory for the War Defense Plant Corporation in a 35-acre area.

Marsh Tritrol Company, Chicago, has announced the appointment of the Energy Control Company, Philadelphia and New York, as sales agents for the company's regulator. The Philadelphia office of the Energy Control Company, 3107 W. Broad St., will cover the Philadelphia area, including southeastern Pennsylvania, southern New Jersey and Maryland. The New York office, 205 East 42nd St., will cover Connecticut and east central New York.

L. H. Taylor has been appointed manager of Product Service which has become a division of **General Electric Company's** Appliance & Merchandise Department. Mr. Taylor has been with General Electric since 1925.



L. H. Taylor

The election of William D. Reed as vice-president has been announced by the **Sawhill Manufacturing Company**, Wheatland, Pa. Mr. Reed was formerly general sales manager of the company.

According to information released by Harry P. Dilkes, the **Neptune Manufacturing Company**, Philadelphia, moved on March 1 to new and larger quarters. Not only has the company enlarged its space, but it has also acquired a modern shop for the complete manufacture of its products.

The **Standard Heater & Oil Equipment Co.**, Jersey City, N. J., has just purchased a factory building and adjoining land.

Anchor Sanitary Company, Pittsburgh, has announced the appointment of William France to the position of manager of industrial division. Mr. France's new work, including general sales, will involve development work.

Awards, Honors

Congratulatory messages, "E" awards, "M" awards, stars and honor rolls continue to call the country's attention to the role our industry is playing in the war program.

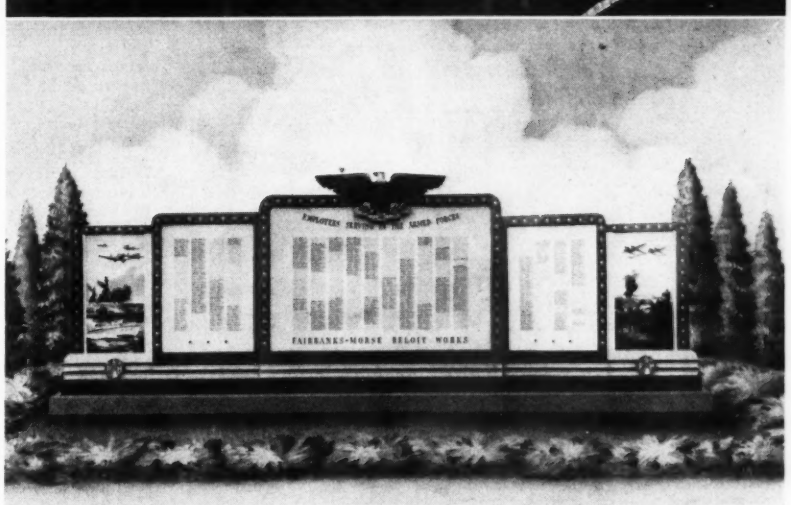
On February 24 the Army-Navy "E" flag was raised over the U. S. Machine Corporation's Lebanon, Indiana, plant. Besides the continuing manufacture of stokers to meet the increased demands of conversion, U. S. Machine Corp. is daily pouring out huge quantities of direct war material. Presentation was made by Col. F. A. McMahon and was accepted by Carl J. Winkler, president of the company.

Jenkins Bros., Bridgeport, Conn., was honored doubly. On March 2, the U. S. Maritime Commission's "M" pennant was presented to the company in honor of its excellent production for that branch of the services. Again, on March 9, recognition was given the company and workers by the awarding of service stars for the already-received "E." This denotes continuous excellence in production.

Penn Electric Switch Co., Goshen, Indiana, received, on March 5, the Army-Navy "E" for proficiency in war production. Comdr. James S. Laidlaw, U. S. N., presented the flag to Albert Penn, president. Mr. Penn promised that not only would the company and employees keep up their production but would even try to increase it.

An honor roll has been erected, to its employees now in the armed services, by Fairbanks, Morse & Co. works in Beloit, Wisconsin. Placed on it at the present time are over 800 names.

Frost Company, Kenosha, Wis., received a congratulatory message from Rear Admiral W. H. P. Blandy, chief of the Bureau of Naval Ordnance. He called attention to the fact that some of the equipment used to shoot down 32 Jap planes in as many minutes in a recent sea-air engagement was manufactured by Frost Co.



Top photograph: Pres. Carl J. Winkler, U. S. Machine Corp., Lebanon, Ind., receives the Army-Navy "E" flag from Col. F. A. McMahon. Center photograph: Left to right, Comdr. James S. Laidlaw, Corp. W. Ned Lacey, Major Joseph G. Wood, Malcolm E. Henning, vice president, and Albert Penn, president, Penn Electric Switch Co., Goshen, Ind., holding the "E" flag. Bottom photo: Artist's conception of the newly erected honor roll for Fairbanks, Morse & Company's Beloit work's employees

News of Business . . . . .

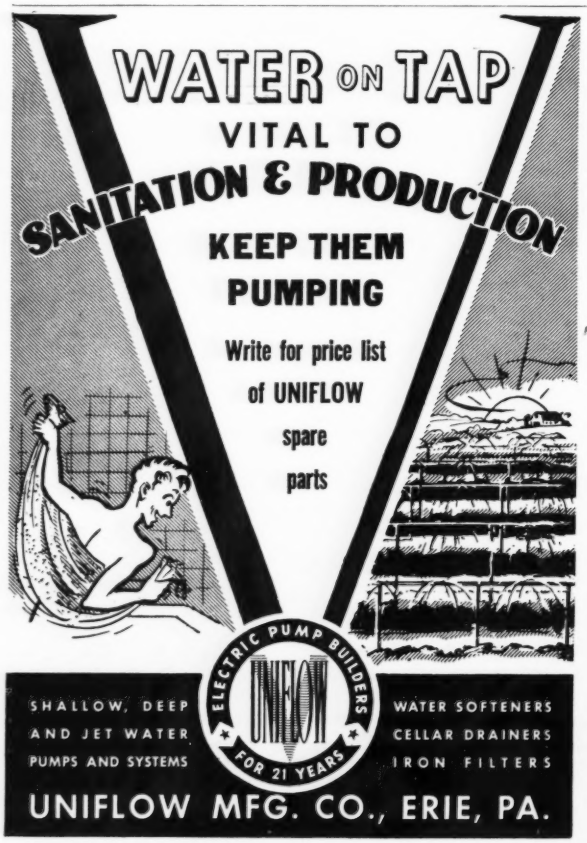
Volume Down

● *Smallest decrease in February sales reported by south Atlantic states wholesalers.*

Industrial production, as measured by the Federal Reserve seasonally adjusted index, advanced 1 point to a new peak of 201. As in all recent months, the rise was concentrated almost entirely among durable-goods manufacturing industries. Reports to the Department of Commerce Industry Survey indicate that the gross value of products manufactured in the United States soared to a new peak of 121 billion dollars for 1942 as a whole—comparing with the previous record total of 94 billion dollars in 1941 and is more than double the 57 billions reported by the Census of Manufacturers in 1939. Because the products of some establishments are used as materials by others this gross value includes duplication estimated at roughly one-third of the total. In 1942 war materials accounted for approximately one-half of the estimated 80 billion dollars net value of manufacturing output after adjustment for duplications.

Reports from 65 key plumbing and heating wholesalers throughout the country indicate an average decrease of 31.0 per cent in their sales in February as compared with February of last year. (These same wholesalers reported a 37.0 per cent decrease last month as compared with January '42.) Further, these wholesalers report a 33.2 per cent average decrease for the Jan.-Feb. period of this year as against the same period of '41. Thirty of the reporting wholesalers expect business in March to show a decline as compared with March of last year, 16 expect it to remain about the same, one (in the East South Central States) expects it to show an increase and 18 failed to comment. The South Atlantic States showed the smallest decrease in February as compared with February of '41, with 9.8 per cent, followed by the Pacific States with a 16.4 per cent decrease; Middle Atlantic States, a 31.9 per cent decrease; West North Central States, a 37.0 per cent decrease; East North Central States a 39.9 per cent decrease and the New England States, a 48.6 per cent decrease.

Shipments of mechanical coal stokers, as reported to the U. S. Bureau of Census for January, 1943, indicate a considerable gain in installations of commercial and industrial size stokers for conversion jobs as compared to January of '42 and December of '42. January, 1943, Class "A" and power size stoker sales (capacity of more than 60 lbs of coal per hour) totaled 1,415 units compared with 950 in January of '42 and 1,033 in December of '42. Only 932 Class "B" stokers (with a capacity of less than 61 lbs coal per hr) were shipped in January as compared with 5,646 in January of '42, the reason being the curtailment of manufacture of these in September of last year upon order of the WPB. Oil burner shipments in January of this year were 7,503—a 54.3



PROPERLY COOLED DRINKING WATER ALWAYS AVAILABLE
EBCO
Electric Water Coolers
ALLIES OF
PRODUCTION
EBCO Water Coolers are a recognized aid to production in war industries throughout the country. Their reliable, low-cost delivery of invigoratingly cool water helps keep workers on their toes—
a contribution to Victory that began 20 years ago, with EBCO'S pioneering leadership in the electric water cooler field.
Today, the advantages of EBCO's advanced features and modern production-line manufacturing methods are also being utilized in EBCO Shipboard Coolers, built to Government and Navy specifications. If you have priority requirements for electric water coolers, write or wire EBCO. Perhaps we can help you.
The EBCO Manufacturing Company
401 W. Town St., Columbus, Ohio

per cent decrease from the 16,203 shipped in the same month last year. Range boilers showed a decrease of 20.2 per cent in January as against January of last year, whereas in December of '42 they showed a 40.1 per cent decrease compared to the previous year. All plumbing and heating items showed decreases, and as has been true for the past year, steel boilers, with an 8.8 per cent decrease, showed the smallest decline of all the items listed in the table.

SHIPMENTS OF PLUMBING AND HEATING EQUIPMENT

	Jan., 1943	Jan., 1942	Per Cent of Change Jan., '43 as compared with Jan., '42
Mechanical Stokers Classes 1, 2 and 3 for domestic, apartment and small commercial use: Number of Units	1,764	6,350	—73.0
Oil Burners Number of Units	7,503	16,203	—54.3
Steel Boilers Number of units	917	1,005	—8.8
Domestic Water Systems Number of Units	5,043	17,502	—71.2
Range Boilers Number of Units	40,926	51,259	—20.2

News of Women . . . . .

Members of the Women's Auxiliary attending the Missouri State Convention from St. Louis were: Mrs. I. Schlapprizzi; Mrs. Wm. Thole, treasurer; Mrs. Jos. Sundo, state president

Reelect Officers

All of the officers of the New Hampshire Auxiliary were reelected at the meeting held at the Hotel Carpenter, Manchester, recently. They are: Mrs. J. Vincent Moran, Manchester, president; Mrs. William A. Gosselin, Berlin, vice-president; Mrs. Merton Walker, New London, secretary; and Mrs. Joseph Greenwood, Bristol, treasurer.

Me. Elections

On Tuesday, March 8 at the DeWitt Hotel in Lewiston, Maine, the Women's Auxiliary elected the following officers: Mrs. Charles B. Davis of Waterville, president; Mrs. Victor V. Larrabee, Belfast, vice president; Mrs. William Johnson, Woodfords, secretary; Mrs. Iver H. Iverson, 3rd, treasurer, both reelected.

Fla. Summary

The third board meeting of the Florida Auxiliary was held at the Seminole Hotel, Jacksonville, March 20. Representatives from the various districts were: Pres. Mrs. Chester Armstrong, Manitee; District V. P. Mrs. Henry Griggs, Bradenton; Past Pres. Mrs. William Dunston, Leesburg; Mrs. A. R. McGonigal, Daytona Beach; Sec. Mrs. Ralph McGuire, Miami; District V. P. Mrs. F. R. Fanning, Winter Park; Past Pres. Mrs. T. H. Thompson, Jacksonville; and Mrs. D. A. Mayfield and Mrs. H. G. Dupree also of Jacksonville.

Mrs. Armstrong, president, opened the meeting with prayer and the creed was repeated in unison. Bulletin No. 2 from the national president, Mrs. W. E. Miller, was read. National chairman of Sanitation, Mrs. Spicer, sent stickers for tubs and literature on sanitation. Also in the line of business was a donation which is to be sent to the National Founders Fund.

S. F. Auxiliary

The March 4 meeting of the San Francisco Auxiliary was held at Plumbers Hall with the president, Mrs. V. C. Reed, presiding. Following luncheon, which was furnished by the women, the afternoon was devoted to whist and bridge.

The Auxiliary has been actively supporting the war effort by contributions to the Red Cross, a donation to the "bomber fund" and the War Chest, and is making plans to hold an entertainment for the men at the Army hospital on The Presidio. Also in the line of worthwhile endeavors, they financed the purchase of a Seeing Eye dog for a blind man.

Women of the San Francisco Auxiliary in attendance at the meeting of March 4

Looking for

CONVERSION PARTS for these boilers ?

OBSOLETE MAKES • TRADE NAMES

ACME	LENNOX	
ATLAS	NICO	
BAY STATE	NOVUS	
CENTURY	PHILADELPHIA	
CONTENTO	QUAKER CITY	
CRIMSON FLAME	REX	WESTERN
EASTERN	RIVAL	WINDSOR
ESSEX	SOVEREIGN	WYOMING
IMPERIAL	SUPREME	YUMA

A Reference List of 105 names has been compiled on a handy reference card.
WRITE FOR YOUR COPY

Manufacturers Merged with "NATIONAL"

Continental Heater Co.
Federal Radiator Co.
Gurney Heater Mfg. Co.
Lincoln Niagara Corp.
National Steel Boiler Co.
Niagara Radiator & Boiler Co.
Novelty Iron Co.
Union Radiator Co.
Utica Heater Co.

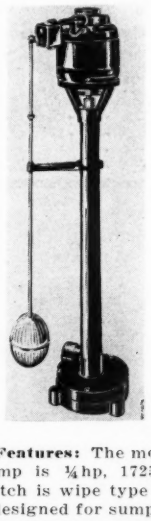
OBTAIN PARTS FROM
THE NATIONAL RADIATOR COMPANY
Through Wholesalers or our Branches

BALTIMORE, MD. 2622 Matthews St.
BOSTON, MASS. 167 Bridge St. (Cambridge)
BUFFALO, N.Y. 220 Delaware Ave.
CHICAGO, ILL. 400 W. Madison St.
CLEVELAND, OHIO 1246 W. 4th St.
DETROIT, MICH. 5736 Twelfth St.
JOHNSTOWN, PA. 221 Central Ave.
MILWAUKEE, WIS. 759 W. Milwaukee Ave.
NEW YORK, N.Y. 60 E. 42nd St.
PHILADELPHIA, PA. 401 No. Broad St.
PITTSBURGH, PA. 4th & Wood Sts.
RICHMOND, VA. 7th & Main Sts.
WASHINGTON, D. C., 600 "W" St., N. E.

News of Products

Sump Pumps

This modestly-priced sump pump is an all iron pump, bonderized and painted with two coats of enamel, having a green enamel stem and a black enamel base.



Listed Features: The motor on the pump is ¼ hp, 1725 rpm; the switch is wipe type action and is designed for sump pump operation under damp conditions. There is no metal to metal contact between the motor and the pump shaft. The discharge has a 1¼ in. outlet, this larger outlet, it is said, allowing free discharge of water without choking. Automatic lubrication is taken care of by a wooden bushing impregnated with oil.

Manufactured by: Neptune Manufacturing Co., 5555 N. Lawrence St., Philadelphia, Pa.

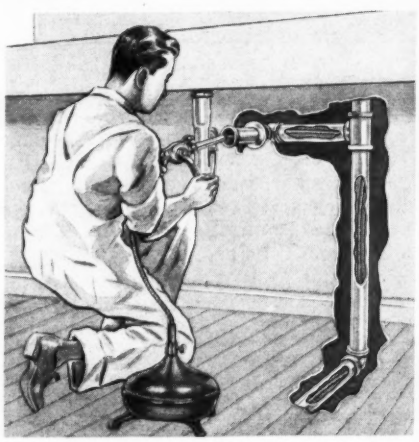
● ● ●

Valve

This packless radiator valve, with cast iron body and cover using a minimum of critical materials, conforms to the simplification program of the War Production Board.

Listed Features: Construction features of the valve include all-metal packless seal consisting of two spring steel wafers which form a seal against the annular collar on the valve stem. It is stated that "this metal-to-metal seal is permanently leak-proof on pressure and vacuum." The valve has female inlet and outlet connections with left hand threaded outlet and right hand threaded inlet. It is furnished

CLEANS SLUGGISH WASTE LINES...



• Fast!
Saves Labor!
• Cuts Costs!
Builds Profits!
• No Soiled Floors!
No Splashing!

No rodding job is too tough for O'BRIEN Cleanout Tools. This gear-driven, high-speed gun spins the strong, flexible cable of high-grade music wire, 'round bends, right angles, fittings and traps . . . right to the source of trouble . . . cuts its way through in a hurry! One man can do the job! No splashing . . . no soiling the floor . . . because soiled rod is reeled inside the rust-resisting container.

Widely used in Army Camps, Air Fields, Naval Stations, Ordnance Plants, and by leading plumbers throughout the country. The O'BRIEN Cleanout Tool makes all rodding jobs PROFIT JOBS! Write or see your wholesaler. Early shipping dates assured in all size sewer rods.

O'BRIEN MANUFACTURING CO., Dept. B, 1505 Crescent Avenue Park Ridge, Ill.

O'Brien CLEAN OUT Tools

in angle pattern only, and made in two sizes: ¾ in. and 1 in. The handle is of molded non-heat-conducting composition.

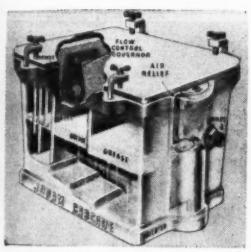
Manufactured by: Jas. P. Marsh Corp., 2073 Southport Ave., Chicago.

● ● ●

Interceptor

The vitreous glazed earthenware grease interceptor illustrated here is suitable for use in hotels, restaurants, residences, industrial plants and other places where food is prepared and served, and grease is permitted to enter drainage lines.

Listed Features: This interceptor is said to be designed similarly to the company's series "J Cascade" grease interceptor. Because it is important to conserve grease so vital to the Government in the manufacture of explosives, it is stated that the use of grease interceptors is particularly important now. In addition to preventing clogged wastelines (and the accompanying inconvenience, annoyance and expense) it is also necessary to develop another source of supply for a considerable part of this vital material, as a large part of kitchen grease now wasted could be reclaimed for



war purposes through the use of these interceptors. It is further reported that tests have shown this new vitreous glazed earthenware receptor to be equal to the cast iron interceptor that it replaces. A flow control fitting is furnished with each interceptor.

Availability: These interceptors are available for immediate delivery.

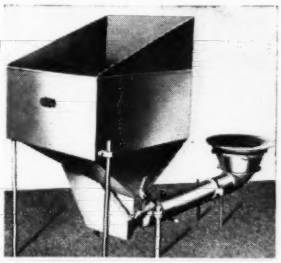
Manufactured by: Josam Mfg. Co., Empire Bldg., Cleveland, Ohio.

● ● ●

Stoker

To aid in the Government's program of conversion to save fuel oil, manufacture of these 65 lb per hr hopper type stokers has been authorized by WPB.

Listed Features: This Model C-21, spill-over anthracite stoker is said to be ideal in the Government conversion program because of . . . the simplicity . . . the modest cost . . . and the absence of excessive weight in a unit of this capacity. It is stated by the manufacturer that this unit will handle jobs that have required 10,000 gallons of fuel oil, and thus should easily carry jobs that have required a lesser gallonage. Dual or twin unit installations of this model, it is reported, should take care of larger heating plants that formerly used 20,000 gallons of fuel oil.



Availablity: Shipments can be made when accompanied by form PD-668, properly authorized by any WPB field office.

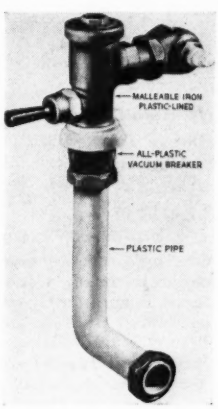
Manufactured by: The Catskill Metal Works, Catskill, N. Y.

● ● ●

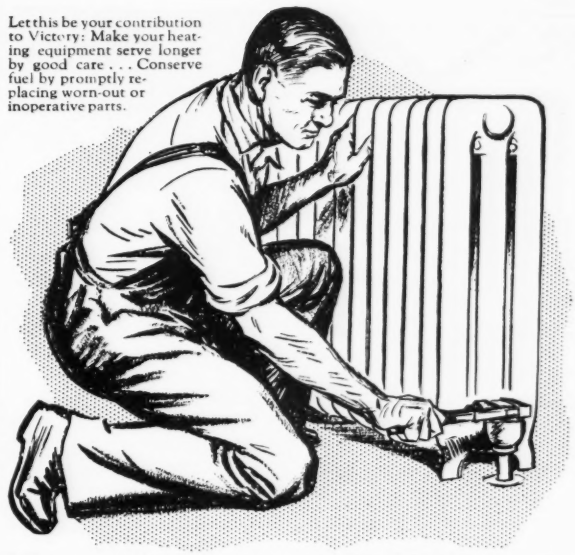
Flush Valve

To cooperate with WPB'S copper conservation efforts, this new flush valve has been designed so that its net copper content is said to have been reduced from approximately 6 lb to less than 4 oz per valve.

Listed Features: This new valve, it is reported, has been thoroughly tested under various conditions and has been found durable beyond expectations. The body of the valve is made of malleable iron, with a plastic sleeve inserted as a lining—the malleable iron is said to provide the strength, while the plastic lining provides a smooth corrosive-resistant surface with which the piston will come in contact. The new plastic piston now has fewer parts and is simpler in design. The all-plastic vacuum breaker (outer shell is of transparent plastic) permits visual inspection of the flapper and its operation.



Manufactured by: Sloan Valve Co., 4300 W. Lake St., Chicago.



Let this be your contribution to Victory: Make your heating equipment serve longer by good care . . . Conserve fuel by promptly replacing worn-out or inoperative parts.

How to get full heat from every Radiator

To get full heat from radiators ample steam must reach them . . . steam must be held until condensed . . . air and water must be removed. For these results:

(1) Make sure radiator supply valves are open. (An occasional drop of oil on valve stem makes them open easier and preserves packing.) Worn-out seat discs and packing should be replaced.

(2) Remove obstructions from front and top of radiators. Packages, clothing, etc., on radiators reduces their heat output.

(3) Take out trap interior *when cool* and remove dirt and scale. Wipe trap seat and valve clean with rag or waste dipped in kerosene.

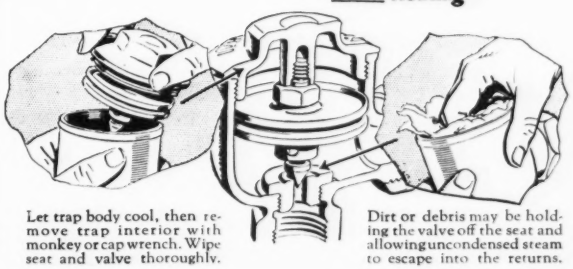
(4) Replace inoperative trap thermostats and excessively worn or nicked trap seats.

Your nearest Webster Representative will tell you how to detect inoperative traps . . . look in your telephone book or write us for his address. When trap interiors must be replaced, use genuine Webster Thermostatic Assemblies—they can be inserted in old trap bodies without disturbing piping. All work done right on the job.

WARREN WEBSTER & CO., Camden, N. J.
Pioneers of the Vacuum System of Steam Heating : : Est. 1888
Representatives in principal cities : : Darling Bros. Ltd., Montreal, Canada.

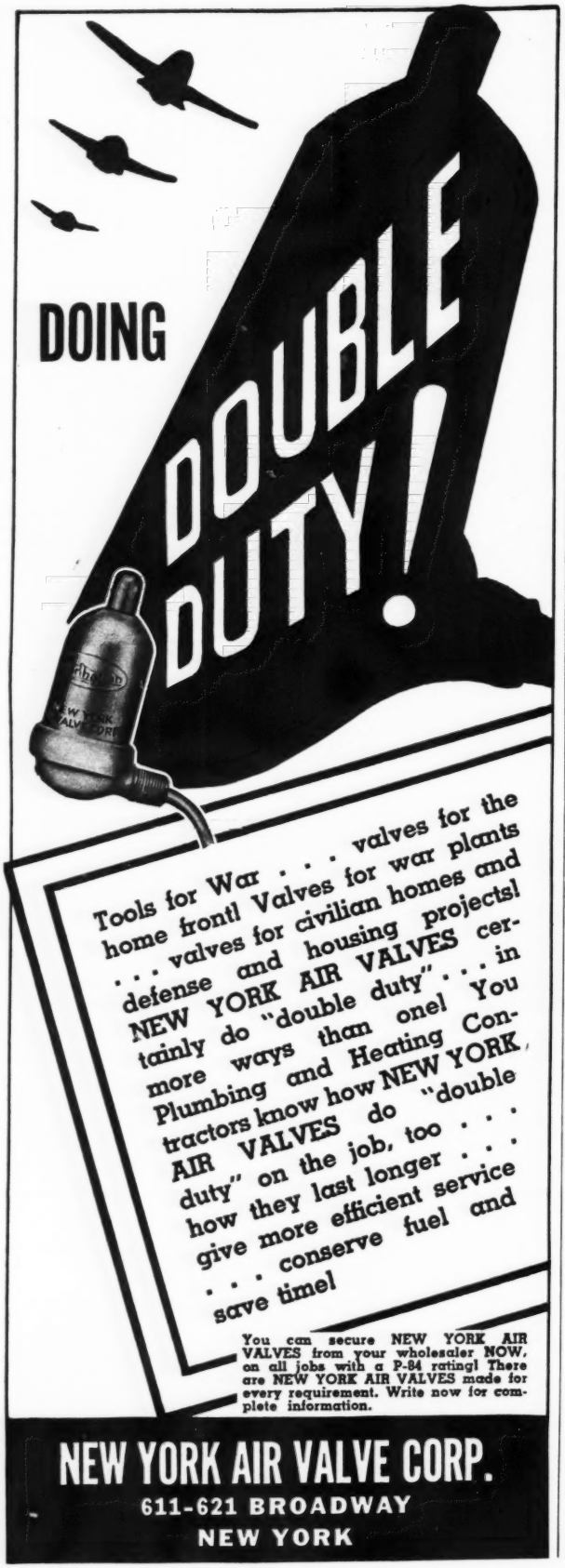
ARMY E NAVY

Webster Steam Heating



Let trap body cool, then remove trap interior with monkey or cap wrench. Wipe seat and valve thoroughly.

Dirt or debris may be holding the valve off the seat and allowing uncondensed steam to escape into the returns.


DOING
DOUBLE DUTY!
Tools for War . . . valves for the home front! Valves for war plants . . . valves for civilian homes and defense and housing projects! NEW YORK AIR VALVES certainly do "double duty" . . . in more ways than one! You Plumbing and Heating Contractors know how NEW YORK AIR VALVES do "double duty" on the job, too . . . how they last longer . . . give more efficient service . . . conserve fuel and save time!
You can secure NEW YORK AIR VALVES from your wholesaler NOW, on all jobs with a P-84 rating! There are NEW YORK AIR VALVES made for every requirement. Write now for complete information.
NEW YORK AIR VALVE CORP.
611-621 BROADWAY
NEW YORK

News of Sales Aids

Unit Heaters

Type of Literature: 9⅛ by 11⅞ in. Maintenance Chart for Unit Heaters. **Listed Features:** Rules are given on the proper care of the various parts of the unit heater so as to insure satisfactory operation and prevent damage and deterioration. As to the motor, information is given on the manner in which it should be cleaned, how the ball bearing and sleeve bearing motors should be lubricated, and overload protection. Complete information is also given on the cleaning of the condenser, and five rules to be followed as internal corrosion safeguards. Finally, information is given on the cleaning of the casing. **Issued by:** Modine Mfg. Co., 1820 Racine St., Racine, Wisc.

● ● ●

Welding

Type of Literature: An illustrated 12 page, 10 in. by 13⅝ in. booklet entitled "The Romance of Piping." **Listed Features:** This interesting booklet, illustrated with photographs and drawings, presents a history of the development of piping beginning with the first cave man to use a hollow log for piping water, to the latest forward step in the adoption of welded piping. The complete story is told . . . "the piping from the Pyramids to the Outer Temple at the highwater line of the Nile . . . stone and lead developments by the Carthagenians, Greeks, Romans . . . cast iron piping's appearance in the fountains of Versailles in 1664 . . . the Gas Light Era down to the significant improvements of what, by comparison, are just the 'last few minutes' of man's use of this ancient and humble but honorable tool for transporting useful liquids, heat and waste." **Issued by:** Tube Turns, Inc., Louisville, Ky.

● ● ●

Piping Code

Type of Literature: A 227-page book entitled "Code for Pressure Piping." **Purpose:** It is stated that this code "is intended to set minimum safety requirements expressed in language which is intelligible to all who design, manufacture and erect piping systems." **Listed Features:** Contents of the book include an introduction (telling of the purpose and intent of the code); and

No More Damage from Condensation or Sweating Pipes, Tanks, Walls, Ceilings and Air Ducts

NoDrip **A SURE CURE**

● This sensational plastic cork coating prevents condensation drip from metal, concrete, brick, wood, plaster or composition surfaces. Permanently protects metal against rust and corrosion, thus prolonging life of pipes, tanks, etc. Forms a moisture-proof, insulation type coating impervious to acid and alkali.

Stucco-like finish requires no maintenance. A gallon covers about 30 feet of 1" pipe. Dries in 24 hours. Comes in 1, 5 and 55 gallon drums.

Immediate Shipment. Order from your Supply House.

FREE *NoDrip Handbook. All about Condensation Drip and its Prevention.*

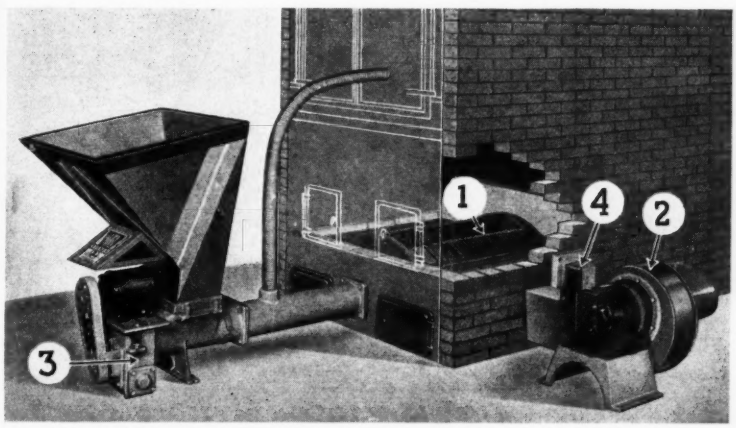
J. W. MORTELL CO.
Technical Coatings Since 1895
504 BURCH ST. KANKAKEE, ILL.

Distributors Wanted!

For Territories Where We Are Not Now Represented

FIRETENDER COMMERCIAL AND INDUSTRIAL STOKERS

WPB URGES CONVERSION FROM OIL TO COAL . . . OUR PRODUCTION GREATLY STEPPED UP TO MEET INCREASED DEMAND



Industrial type FireTender, 300 lbs. to 750 lbs. per hour, has a (1) deep, narrow retort with high tuyeres for burning wide variety of available coal, (2) separate fan unit for maximum clearance in front of boiler, (3) one of the simplest transmissions . . . only 4 gears; always in mesh, no clutch, no gear shift, no shear-pin, (4) patented coal feed control permitting 13 feeding rates.

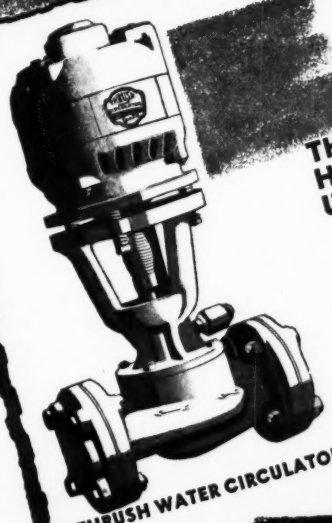
FireTender Stokers—

- Give long years of trouble-free, efficient performance. Quality is built-in.
- Are made by a 45 year old, highly rated manufacturer, one of the pioneers in the stoker field.
- Are endorsed by users from the Atlantic seaboard to the Rockies for their outstanding results — steady, dependable service—savings in fuel and man-power.
- Are now being stepped-up in production to assure prompt shipment in all 10 sizes—70 lbs. to 750 lbs. per hour.

For complete information write, wire or phone — now!

HOLCOMB & HOKE MFG. CO. INDIANAPOLIS, INDIANA

Owners of Thrush Heated Homes... ARE FORTUNATE!



THRUSH WATER CIRCULATOR

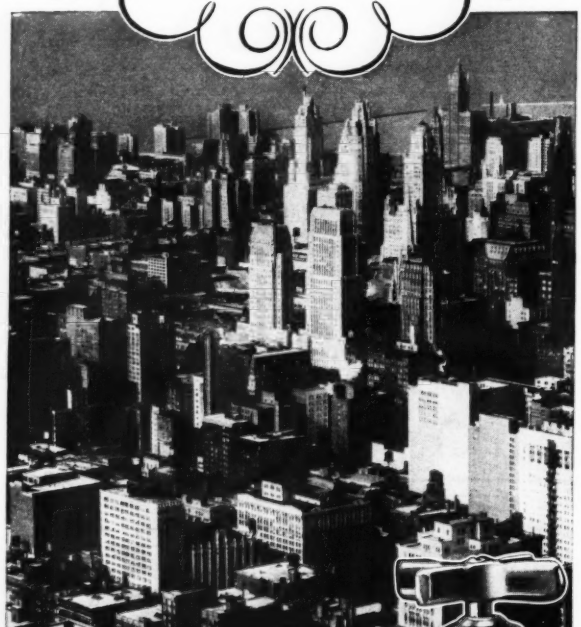
THRUSH FLOW CONTROL SYSTEM OF HOT WATER HEATING ASSURES THE UTMOST HEAT FROM FUEL CONSUMED

FUEL is ammunition! Everyone recognizes the vital necessity for fuel conservation and Thrush owners can be sure they are doing their utmost in this way to help win the war. Thrush forced circulation and automatic flow control make efficient utilization of every possible heat unit. Available for installation where Government regulations permit. Write for more information.

Let us help you "keep 'em running" efficiently

H. A. THRUSH & COMPANY · PERU, INDIANA

"TOPS" IN AMERICA'S CITIES



THROUGHOUT America, in cities large and small from coast to coast, wherever Chicago Faucets are in use they are giving reliable, efficient service. Discriminating users everywhere rate Chicago Faucets "tops" because of their proven long serviceability. All deliveries are subject to W. P. B. rules and regulations.

THE CHICAGO FAUCET CO.
2712 N. Crawford Ave., Chicago

CHICAGO FAUCETS
Last as Long as the Building

FIFTY YEARS IN BUSINESS IS A LONG TIME, JOHN. OUR REPUTATION FOR SELLING ONLY QUALITY PRODUCTS IS WHAT HAS BUILT OUR FIRM.
PLUMBING

BUSINESS REPUTATIONS ARE BUILT ON THE TRUST OF CUSTOMERS

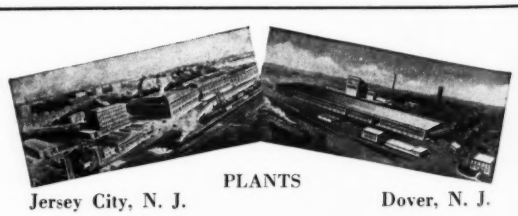
The customers of plumbers who have installed KOVEN products know they can count on these men for complete satisfaction. The dependability of KOVEN high quality has been recognized by plumbers throughout the country for more than half a century.

Among the many KOVEN products are:

RANGE BOILERS Copper
SCULLERY SINKS
KOVEN-PARACOIL TANKS
BARBER BOILERS
WATERFILM STEEL BOILERS
For Automatic Firing
STORAGE TANKS
Steel or Copper
FUEL OIL TANKS
EXPANSION TANKS
PNEUMATIC TANKS
SEPTIC TANKS

KOVEN SERVES FOR VICTORY

We will continue to serve the Plumbing Industry as well as Governmental restrictions permit. We, of necessity, cannot always furnish a complete line due to close co-operation with the Government's War Efforts and the scarcity of materials.



PLANTS
Jersey City, N. J. Dover, N. J.

L. O. KOVEN & BRO. INC.
JERSEY CITY, N. J.

covers sections on (1) power piping systems, (2) gas and air piping, (3) oil piping systems, (4) district heating piping systems, (5) refrigeration piping systems, (6) fabrication details, (7) materials — their specifications and identification. An extensive, alphabetical subject index is given at the end of the code. **Price:** $2.00 per copy. **Available from:** American Standards Association, 29 W. 39th St., New York City.

• • •

Piping

Type of Literature: "Piping Pointers" Bulletin No. 6 — a large broadside showing short cuts to faster piping jobs. **Purpose:** This bulletin is designed to help train the many thousands of new maintenance men needed in war industries to keep piping systems working. **Listed Features:** Numerous suggestions, with illustrations, are given which show the opportunities for making practical substitutions in meeting piping material shortages. Examples of "wartime piping ingenuity" are given such as . . . using an angle valve if a globe valve cannot be obtained (in installations where an angle valve would serve as well) . . . using tees or crosses with plugs to make 90 deg turns in a line when you can't get elbows to complete a rush job . . . fashioning flanges from steel plate under emergency conditions . . . substituting a 10 by 6 reducer and 6 by 4 reducing flange when a 10 by 4 reducer wasn't available, etc. **Issued by:** Crane Co., 836 S. Michigan Ave., Chicago.

• • •

Blow Torches

Type of Literature: An 8½ by 11 in. circular entitled "Turner Topics." **Purpose:** This leaflet is published to be of help to users of blow torches and other gasoline appliances. **Listed Features:** Each issue contains a full page of action pictures entitled "Torchy Theatre," in which instructions for operating and maintenance are given. To date they have available three issues: (1) "How to Light Your Blow Torch"; (2) "How to Clean Your Blow Torch," and (3) "How to Solder." **Issued by:** Turner Brass Works, Sycamore, Ill.

• • •

Guide

Type of Literature: 1943 edition of "Heating Ventilating Air Conditioning Guide"—1268 page volume bound in a blue cover with gold stamping. **Listed Features:** This new edition contains 48 chapters of technical data and general information, including all

YOU CAN DEPEND ON...

Economy

SEWAGE AND SUMP PUMPS

Designed by PUMP SPECIALISTS to meet all Sewage Requirements

Economy sewage and sump pumps are built for heavy duty service. The use of these non-clogging screenless type pumps are highly recommended for domestic and industrial sewage.

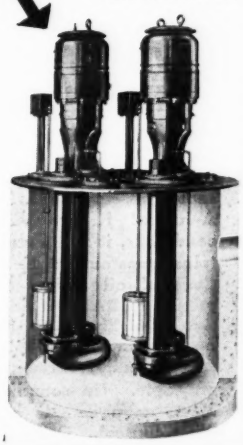
- Smooth, clear passage in case to allow solids, rags, etc. to pass.
- Motor, motor base, drop pipe and case are registered together providing accurate alignment.
- In single or duplex-lengths to suit any basin depth.
- Capacities from 50 to 4000 GPM with heads up to 120 Feet.

Economy

Type SCV Pump

Adaptable and efficient for clear liquid service. Medium priced, compact, quiet, durable. Services from 10 to 500 GPM with heads up to 225 Feet.

Write for Catalog D2-1042 for complete information.



Economy Pumps Inc.

1013 WELLER AVE., HAMILTON, OHIO

Install this new

San DURO

ALL PLASTIC TOILET SEAT for PERMANENCY and ECONOMY!

One-Piece

SANITARY, DURABLE MOLDED PLASTIC TOILET SEAT

Attractive, lustrous, satin-smooth, San DURO Plastic Toilet Seats are strong, yet light in weight. They are moisture-proof, acid-proof—not affected by oil, alkalies, or elements—will not warp, surface is easy to keep clean and sanitary—has no joints, crevices or seams. Requires no maintenance or refinishing. Especially suited for public buildings, apartments, hospitals, institutions, schools and factories. Three models fit all standard bowls.

Write for descriptive literature and prices.

Eclipse ECLIPSE PLASTIC INDUSTRIES

5153 NORTH THIRTY-SECOND ST. • MILWAUKEE, WIS.

Only one thing counts these days and that's to make the Axis boys yell "Uncle!"

It takes all kinds of equipment to back up our fighting men. Even the Tuthill Pumps and Fuelstats that would normally serve in the home are needed at the battlefront.

Until Victory is won, you can look to Tuthill's authorized service stations and the factory to keep your Tuthill equipment repaired or re-conditioned for efficient operation.

TUTHILL PUMPS ARE SERVING ARMY • NAVY • AIR FORCE • MERCHANT MARINE

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

BUY UNITED STATES WAR BONDS AND STAMPS

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Tuthill

TUTHILL PUMP COMPANY

939 EAST 95TH ST. • CHICAGO, ILLINOIS

phases of heating, cooling, ventilating and air conditioning, and related phases of refrigeration. Information on state laws and codes forms a new section of the book. Also included is an "Emergency War Practices" section, which outlines methods for conservation of materials. A new chapter entitled "Abbreviations, Symbols and Standards" has also been added. The revised Catalog Data Section, profusely illustrated, contains much useful equipment data. In its total of 1268 pages, this volume includes 872 pages of technical data; 264 pages of equipment data; and the Roll of Membership of the Society. **Price:** $5.00 per copy. (Thumb-indexed copies are obtainable at $5.50). **Issued by:** American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York City.

• • •

Pipe and Tube Bending

Type of Literature: A book on pipe and tube bending. **Listed Features:** This booklet contains a set of original tables —said to be time and work saving—for rapid calculation of bends with a minimum of error. It is further stated that the tables, which are simply and thoroughly explained (with drawings), are valuable wherever tubing is bent, and are presented in a manner said to be easily understandable by any man. Complete center line and "gain" values, tabulated by the author, permit finishing bends without taking work from the machine, or using a full-scale layout. **Price:** $1.00 per copy. **Issued by:** Cornell Maritime Press, 350 W. 23rd St., New York City.

• • •

Tools

Type of Literature: A booklet entitled "These Are Your Weapons." **Listed Features:** This hand book, it is stated, popularizes the principles of work simplification — presenting fourteen "Laws of Work" in the form of examples. It is illustrated with humorous pen-and-ink sketches and before-and-after photographs of specific jobs where production was increased by the application of work simplification principles. It is further stated that "firms faced with the growing crisis in manpower, or confronted by the problems of training new workers on production jobs will find the book, when used as a training manual, a valuable stimulus to the production of every worker." An appendix to the book contains an outline of a successful Suggestion Plan. **Issued by:** Plomb Tool Co., 2209 Santa Fe Ave., Los Angeles, Calif.

NO WASTE HEAT Escapes A DRAFT-A-JUSTOR

SAVES 10% TO 20% ON FUEL USED!

STOVE, DOMESTIC COMMERCIAL sizes from 4" to 24" in diameter.

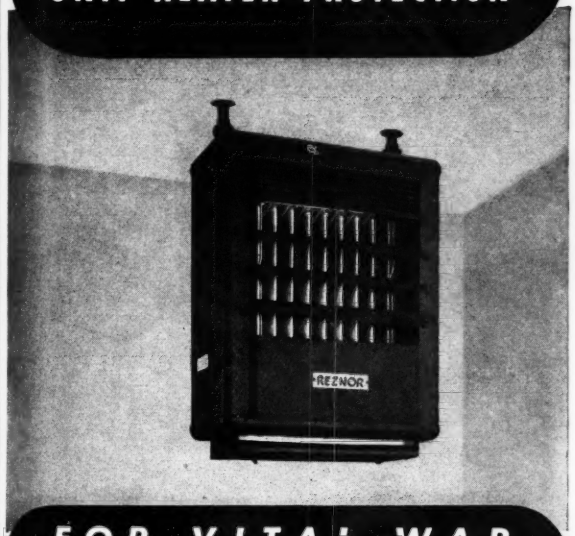
INDUSTRIAL sizes from 24"x 24" to 5'x12'.

For FUEL-SAVING, LABOR-SAVING efficiency so vital in war-time, every oil burner today should be equipped with a Draft-A-Justor! Regardless of outdoor conditions, it automatically maintains constant, correct proportions of oil and air to assure properly BALANCED combustion. Quickly and easily installed on any smoke pipe . . . whether set vertically, horizontally or at an angle. No complicated parts to get out of order! Meets requirements of Underwriters' Laboratories for draft control. Over a million in use today . . . a size for any job! Write for literature and prices.

PREFERRED UTILITIES MFG. CORP.

33 West 60th St., New York, N. Y. Boston Office: 839 Beacon St.

REZNOR
UNIT HEATER PROTECTION



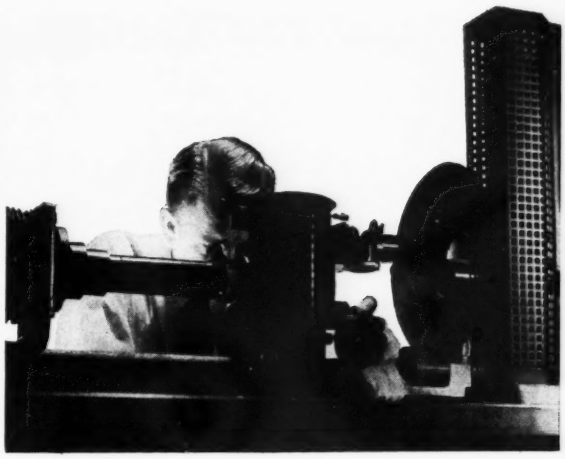
FOR VITAL WAR WORKERS EVERYWHERE

TODAY we must protect America's men and women who serve on the production lines. Therefore, these people need heat-comfort so they can work more efficiently with less time off for illness due to fatigue, colds, coughs, etc. Reznor Gas Fired Unit Heaters provide the answer to this problem. Furthermore, Reznor Equipment may be installed at far lower cost with fewer men, and in less time than other types of heaters. They move more warm air during winter and provide greater air circulation during summer—more war production results.

Write today for literature.

REZNOR MANUFACTURING COMPANY
300 James Street, Mercer, Penna.

"GAS HEATERS EXCLUSIVELY SINCE 1888"



Examination of porcelain enamel samples under a metallurgical microscope

War research now means better hot water tanks later!

The war effort has become the greatest of all laboratories. Improvements in sheet metals that would normally take *years* are being telescoped into months under forced draft.

Porcelain enameled hot water tanks, for instance, are likely to have an even better coating; and this will enable you to offer a much more durable and satisfactory product. Improvements in the metal base will play a prominent part in this development.

Here at ARMCO, research not only is creating sheet metals with remarkable new properties, but is constantly improving the older metals. The adaptation of enameling iron to war products has led to discoveries which mean better porcelain enameled products for peacetime uses.

The end of the war will see a tremendous demand for plumbing products. And the new sheet metals will broaden your opportunities for service and profit. The American Rolling Mill Co., 551 Curtis St., Middletown, Ohio.

THE AMERICAN ROLLING MILL COMPANY

PORCELAIN ENAMEL ON ARMCO INGOT IRON

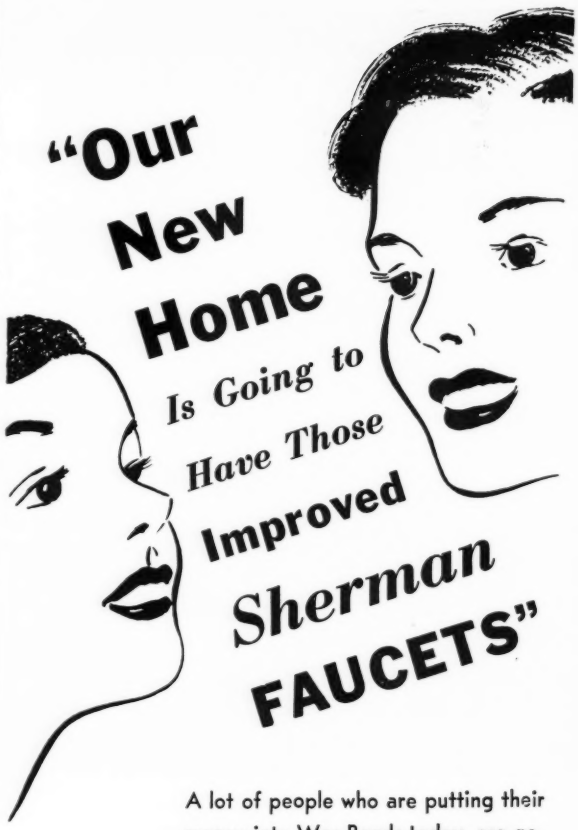
For the fifth time in the 127 years of our existence we, of The F. H. Lawson Company, are serving to help America defeat its enemies. And today, over seven acres of floor space in our plant are devoted to the production of the tools of war.

Tomorrow we will again turn to the manufacturing of a complete line of bathroom cabinets—cabinets designed for the house of the future from the materials best suited to their design. Perhaps they will be made of steel, perhaps of plastics or of aluminum or even of plywood. In any case, the finest cabinets will bear the name of Lawson.

THE F. H. LAWSON CO.
Bathroom Cabinet Division
CINCINNATI, OHIO

Lawson BATHROOM CABINETS
127 YEARS OF QUALITY Lawson

INVEST IN AMERICA—BUY WAR BONDS



A lot of people who are putting their money into War Bonds today, are going to build new homes or remodel old ones with that money when the war ends.

These people who are planning their homes, are going to read about the improved Ball Bearing Faucets that Sherman is designing. They are going to want the new Sherman features of design. They are going to insist upon the exclusive Sherman Ball Bearing construction that makes possible a 12-months' guarantee against leakage.

Better plan now to sell the best line of Faucets on the market—the Sherman Ball Bearing line.

H. B. SHERMAN MFG. CO.
Battle Creek Michigan

Sherman
BALL BEARING FAUCETS

Plastics

Type of Literature: An extremely colorful, profusely illustrated booklet. **Purpose:** This booklet presents a picture tour of the plant, showing facilities available to users of thermoplastics for the creation of new products and improvements of others. **Listed Features:** Detailed information, with accompanying illustrations, is given on the firm's tool and molding rooms, engineering, designing, finishing, assembly and inspection departments. Plastic material data includes such information as: How Thermoplastics are (a) injection molded, (b) extrusion molded; thermoplastics . . . what they are; planning plastic products, and injection molds, advantages of injection molding, etc. Complete data—such as general characteristics, formulation, uses and trade names—are given on the various thermoplastic materials injected molded by this company. Tables showing the range of physical properties of plastics for injection molding are also given. **Issued by:** Elmer E. Mills Corp., 812 W. Van Buren St., Chicago.

• • •

Plumbing Fixtures

Type of Literature: A 16⅞ in. by 24⅝ in. wall chart. **Purpose:** To show dealers what they can now sell. **Listed Features:** The manufacturer's line of vitreous china plumbing fixtures, now available for war housing, industrials, and cantonments, is illustrated. Items illustrated include various types of lavatories (with size given under each illustration); urinals (both the wall hung and pedestal type); laundry tray; slop sink; drinking fountain; water closets (seven different types); etc. **Issued by:** Eljer Co., Ford City, Pa.

• • •

Flush Valve

Type of Literature: A four-page 8½ in. by 11 in. Bulletin No. 858-W. **Listed Features:** This new bulletin gives complete information on the new flush valve for war-time projects. It especially points out that these new valves are designed so as to conserve critical war materials, at the same time providing a dependable, enduring flush valve for essential war-time construction. An illustration of the valve is shown, complete with vacuum breaker which is said to provide positive protection against back siphonage. **Issued by:** The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago, Ill.

WAR PUTS THE FINGER ON IDLE WINDMILLS

Thousands of farm wells need repairing. Too many farmers have had to chop holes in the creek ice for cows to drink . . . or pump and carry water by hand because of a storm-crippled windmill. You can break this important bottleneck in food production by starting a windmill and pump repair drive in your community. Baker will cooperate in furnishing new windmill heads, pumps, cylinders and other repair parts wherever possible. It is easy to see how serious a water shortage is when you consider that the main war-foods — meat, milk, eggs — are about *three-fourths water*. Your nearest Baker branch will give you every possible assistance—write today!

Monitor SKY POWER WINDMILLS

WINDMILLS • PUMPS • PUMPJACKS • HAND PUMPS • WELL SUPPLIES

DISTRIBUTED BY

BAKER MFG. CO.: Minneapolis, Minn.; Madison, Wis.; Fort Dodge, Ia.; Cedar Rapids, Ia.; Fredericksburg, Ia.; Omaha, Neb.; Kansas City, Mo.; Enid, Okla.; Hutchinson, Kan.; Brandon, Manitoba, Canada.

AXTELL CO.: Fort Worth, Texas; Amarillo, Texas; Lubbock, Texas; San Angelo, Texas.

BAKER MFG. CO., EVANSVILLE, WIS.

He Also Serves Who Saves

DUNHAM DIFFERENTIAL HEATING

Conserves fuel by circulating *Sub-atmospheric Steam* from temperatures of 133° (Cool Steam) up to 220° or more (Hot Steam). Thus, Heating System distributes only the required heat units to offset heat loss whether the weather is bitter cold or fair and mild. Indisputable proof of its remarkable economy is found in many ordinary systems in industrial and commercial buildings which have been converted to "Dunham." For example, 33 buildings in one district alone (using either coal, oil, gas or purchased steam) show an average annual saving of 39.2% in fuel consumption for a ten year period (detailed information on request). Write C. A. Dunham Company, 450 E. Ohio St., Chicago.

THE DUNHAM *Victory Line*

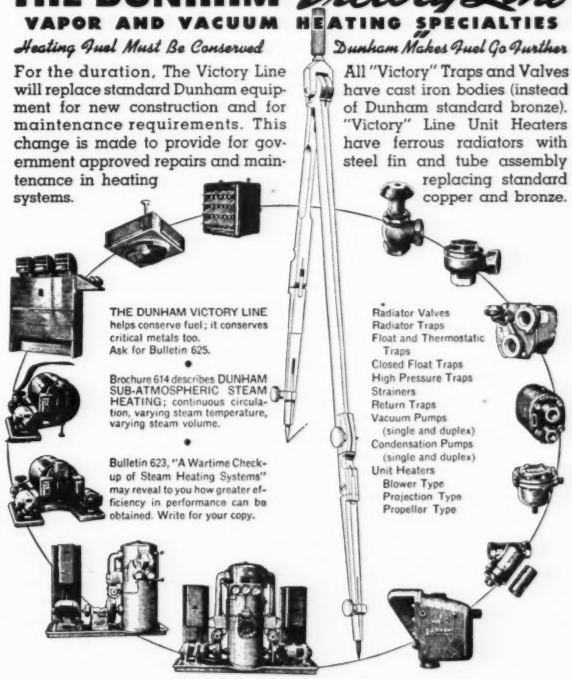
VAPOR AND VACUUM HEATING SPECIALTIES

Heating Fuel Must Be Conserved

For the duration, The Victory Line will replace standard Dunham equipment for new construction and for maintenance requirements. This change is made to provide for government approved repairs and maintenance in heating systems.

Dunham Makes Fuel Go Further

All "Victory" Traps and Valves have cast iron bodies (instead of Dunham standard bronze). "Victory" Line Unit Heaters have ferrous radiators with steel fin and tube assembly replacing standard copper and bronze.



THE DUNHAM VICTORY LINE helps conserve fuel; it conserves critical metals too. Ask for Bulletin 625.

Brochure 614 describes DUNHAM SUB-ATMOSPHERIC STEAM HEATING; continuous circulation, varying steam temperature, varying steam volume.

Bulletin 623, "A Wartime Check-up of Steam Heating Systems" may reveal to you how greater efficiency in performance can be obtained. Write for your copy.

- Radiator Valves
- Radiator Traps
- Float and Thermostatic Traps
- Closed Float Traps
- High Pressure Traps
- Strainers
- Return Traps
- Vacuum Pumps (single and duplex)
- Condensation Pumps (single and duplex)
- Unit Heaters
  - Blower Type
  - Projection Type
  - Propeller Type

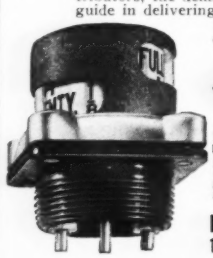
Dunham workers are part of an industrial army doing wartime teamwork. The equipment they build is providing WARMTH for our soldiers, our sailors, our marines and our aviators.

Dunham Makes Fuels Go Further

Oil is a WAR ESSENTIAL!

HELP CONSERVE IT BY EQUIPPING EVERY OIL BURNER INSTALLATION WITH A ROCHESTER GAUGE . . .

With the responsibility of "Customer Rationing" placed directly upon the shoulders of Fuel Oil Distributors, the demand for an **accurate** and **convenient** guide in delivering oil is greater today than ever before. Rochester Gauges meet that demand!

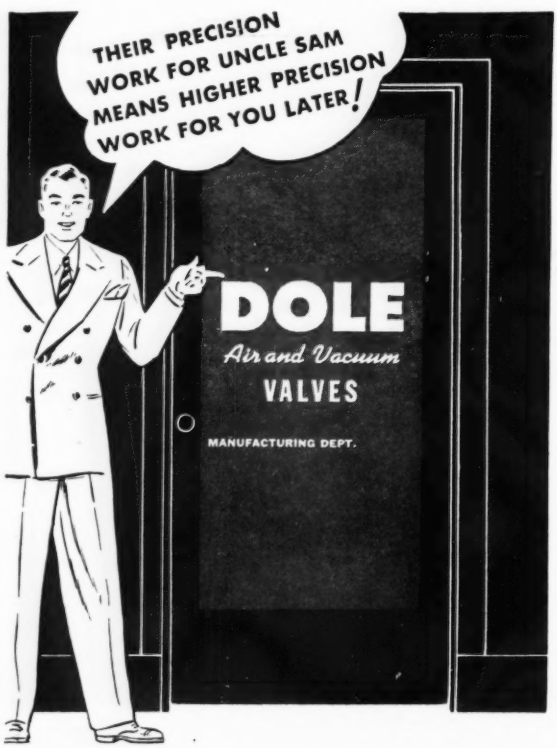


DOUBLE-DIAL for QUICK, ACCURATE READING

is an **exclusive** Rochester feature which permits tank contents to be read "at-a-glance" from **outside** or in the **cellar**! Investigate these low-cost, easy-to-install gauges today! Your Rochester jobber stocks them.

ROCHESTER MFG. CO., INC.
19 Rockwood St. Rochester, N. Y.

Rochester OIL BURNER TANK GAUGES

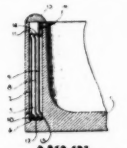

THEIR PRECISION WORK FOR UNCLE SAM MEANS HIGHER PRECISION WORK FOR YOU LATER!
DOLE
Air and Vacuum
VALVES
MANUFACTURING DEPT.

THE DOLE VALVE COMPANY
1901-41 Carroll Avenue, Chicago, Ill.
REPRESENTATIVES IN PRINCIPAL CITIES

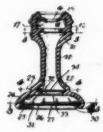
News of Patents

2,313,421. Bathtub With Contained Shower Curtain. Simon E. Dalton, Jr., Atlantic City, N. J.

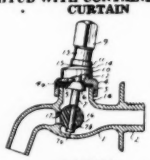
2,314,357. Faucet Attachment. Carl E. Lehman, Chicago, Ill.



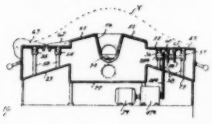
2,313,421
BATHTUB WITH CONTAINED SHOWER CURTAIN



2,314,357
FAUCET ATTACHMENT



2,313,128
FLUID CONTROL VALVE



2,311,100
STOKER

2,313,128. Fluid Control Valve. Ulysses G. Densten, Haddon Heights, N. J., assignor to Strong Manufacturing Co., Portland, Ore.

2,311,100. Stoker. Samuel A. Townsend, Jr., Webster Groves, Mo.

SIMPLE and EFFICIENT
DIRECT DRIVE COUPLINGS

This exclusive direct drive coupling, with rubberized cushion gripped permanently by die-cast ends, has no parts to get out of order, or to lubricate. Minimizes misalignment, free end float, and backlash. Custom-made for specific job. Lengths from 2-1/2" up. Bores 5/16", 3/8", 7/16" and 1/2". A million giving satisfactory service.

Write for sample and further details.

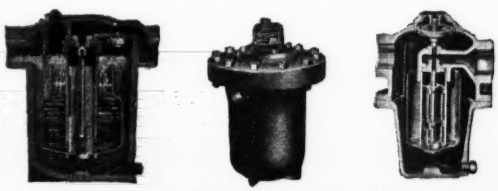
GUARDIAN UTILITIES CO.
218 E. MICHIGAN STREET MICHIGAN CITY, INDIANA

Conserve Fuel!
Control Steam!

ILLINOIS
STEAM SPECIALTIES

Manufacturers of the most complete line of automatic equipment to control steam from boiler outlet to the return inlet. Also a complete line of traps for all services from 5 pounds to 600 pounds pressure and for superheated steam service. Also compressed air service.

Write for bulletins.



ILLINOIS ENGINEERING COMPANY
INCORPORATED 1900
RACINE AVENUE AT 21ST STREET • CHICAGO

COMMERCIAL AND INDUSTRIAL **STOKERS**

AVAILABLE!

Write for FREE Booklet of Complete Facts TODAY!

Never before have Dealers had such an excellent opportunity for sales—for the volume of fine stoker demand is becoming greater than the supply! Yet, you may still get

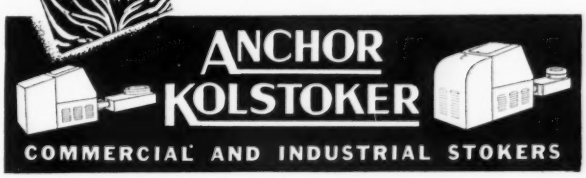
America's Finest Automatic Coal Burner!

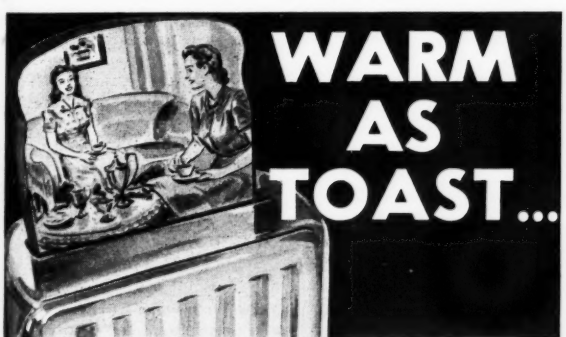
Yes—Anchor—symbol of an organization which has manufactured coal burning equipment continuously for over 78 years—is a product you can thoroughly depend on! Furthermore, we have

All Sizes and Types Now in Stock!

If you need stokers for any type of commercial or industrial use—for bituminous or anthracite coal—for original installation or conversion—write us at once!

Anchor Stove & Range Co., Dept. A.
Division of
STRATTON & TERSTEGGE CO., Inc. Louisville, Ky.





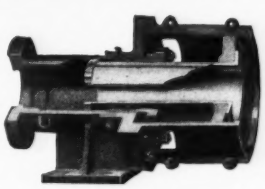
WARM AS TOAST...
ON 25% LESS FUEL

Severe fuel rationing has put *sales magic* into these simple words, "A Field Control keeps you *warmer* on *less* fuel!" Always a best-seller because it cut fuel costs from 5% to 25%, the fuel saving Field Control *now* has a stronger appeal and greater market than ever before. The complete Field line covers all residential and commercial needs. And there's *profit* in every easy sale, installation taking as little as 30 minutes.

Illustrating the Field Type "M" Control, acknowledged the most accurate of draft controls. Write for information on this and other types in the complete Field line of domestic and commercial units.

FIELD CONTROL DIVISION
MENDOTA, ILLINOIS

In Army and Navy Air Bases, army camps and in important defense plants, ADSCO Internally-Externally Guided Joints are safeguarding vital steam, hot water, fuel oil and gasoline lines. Completely guided, these joints meet Army and Navy specifications for controlling expansion and contraction in pipe lines. Approved by leading mechanical engineers.



ADSCO Internally-Externally Guided Joint

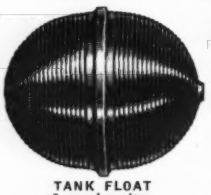
Write for quotations, also Bulletin 35-20DE.

AMERICAN DISTRICT STEAM COMPANY
North Tonawanda N.Y.
Making "UP-TO-DATE" Steam Line Equipment for Over 60 Years

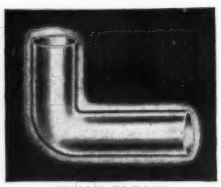
ADSCO INTERNALLY EXTERNALLY **GUIDED JOINTS**

THE NAME
behind the products excites
DEMAND
creates IMMEDIATE
BUSINESS
with BIGGER
PROFITS

AMERICAN



TANK FLOAT
2 popular sizes



FLUSH ELBOW
Molded one-piece
4 sizes

AMERICAN
"Everlast" Molded Plastic
PLUMBING FITTINGS

Superior developments of pioneers and leaders have built their foremost reputation. *The name AMERICAN never goes on a makeshift.* Tough, resistant, Floats, Flush "L's", Stoppers, Slip-nuts, Tailpieces, etc., fulfill *today's* acute need. Wire or write us or nearest representative.

Install AMERICAN—with Nation-wide Prestige.

STOPPERS
7 Sizes

AMERICAN MOLDED PRODUCTS SALES CO.

SALES REPRESENTATIVES

J. M. Butts Co.....Bona Allen Bldg. Atlanta, Ga.
J. M. Kane.....P. O. Box 1552 Fort Worth, Texas
John Livingstone & Co., 164 Jackson St. Seattle, Wash.
Mitchell Love....712-16 No. 16th St. Philadelphia, Pa.
Potter-Roemer Co.....2432 E. 8th St. Los Angeles, Cal.
Clyde Cary.....703 Market St. San Francisco, Cal.
Products Preferred, Inc...47 Kemble St. Boston, Mass.
Paul R. Spencer Co.....4000 York St. Denver, Colo.
John G. Kelly, Inc., 24-14 Bridge Plaza South Long Island City, New York

1752 N. HONORE ST. CHICAGO, ILL.

For the duration
. . . THIS
Watrous
SOAP DISPENSER

• Due to the necessity for conserving critical materials needed for the war, and resultant restrictions covering the use of such materials, we are concentrating on the manufacture of a single type of soap dispenser for the duration—the M-826.

This dispenser meets government specifications for Type 1, Class A—Liquid Rigid Soap Dispenser. It is a highly efficient dispenser, convenient in operation and positive in action. Operated by pushing down on button at top of container.

For the duration this dispenser can be furnished for war projects and government use only—subject to proper priority rating and end use and to availability of material.

THE IMPERIAL BRASS MFG. CO.
1231 W. Harrison St., Chicago, Ill.

* "DUCK BILL" is
helping to shoot the Bull in China's Shop

* DUCK BILL NO-TONE BALL COCK
Eliminates Objectionable Noise

ROCKFORD BRASS WORKS
ROCKFORD, ILLINOIS
The Complete Line of
"Plumbing Brass Goods Since 1890"

Filtrine
WATER
FILTERS

Prevent Dirty Water Troubles

FILTRINE really gets down to fine points. It removes not only rough, suspended material, but the finer bits of clay, rust and vegetable matter. It does a thorough job, day in, day out, for a lifetime. There is nothing to wear out, and the filter medium, when saturated, may be removed and replaced in a matter of minutes. You can't go wrong by specifying FILTRINE. Moderately priced, easily installed, it's the satisfactory answer to the poor water problem. Photographic laboratories find FILTRINE FILTERS a real advantage in eliminating specks in prints and producing better work.

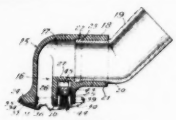
FILTRINE FILTERS comply with specifications for Army and Navy air field photo laboratories. Specify them for your next job.

Immediate Shipment

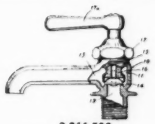
Filtrine
MANUFACTURING COMPANY
53 Lexington Ave., Brooklyn, N.Y.

2,310,554. Suction Nozzle. Arthur W. Seyfried, Racine, Wis., assignor to Scovill Manufacturing Co., Waterbury, Conn.

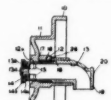
2,311,506. Valve Structure. Alton L. Arcy, East Cleveland, Ohio.



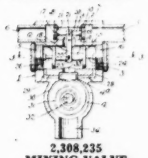
2,310,554
SUCTION NOZZLE



2,311,506
VALVE STRUCTURE



2,310,599
FAUCET



2,308,235
MIXING VALVE

2,310,599. Faucet. Nathan Roach, Cleveland, Ohio, assignor to The Cleveland Brass Manufacturing Co., Cleveland.

2,308,235. Mixing Valve. George C. Fields, South Bend, Ind., assignor to The Dole Valve Co., Chicago.

Questions . . . . . .

(Continued from Page 74)

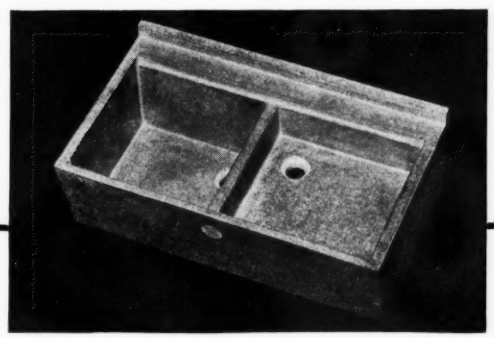
to be furnished by the other radiators so the net saving will be

$$12{,}110 - 4550 = 7560 \text{ Btu}$$

$$\frac{7560}{12{,}110} = .624 \text{ or } 62.4 \text{ per cent}$$

the theoretical saving, which is not as impressive as it first looks as the 70 sq ft radiator may not be more than 10 per cent of the total load.

It is the writer's opinion



ALBERENE STONE
TRAY and SINK COMBINATION for SMALL HOMES

Alberene Stone is *not a critical material.* The new Tray and Sink Combination was designed to meet the demand for a practical, 42" long, moderate-priced unit which could be supplied promptly. Non-absorbing and non-staining, Alberene is ideal for laundry trays, pantry and kitchen sinks, slop sinks. Special sinks can be made to any dimensions to fill any desired spaces. Write today for details and prices on the *new* Tray and Sink Combination.

ALBERENE STONE CORP. OF VIRGINIA
419 Fourth Avenue, New York, N. Y.
Quarries and Mills at Schuyler, Va.

We're right behind those

28%

of our Dick "Buddies"

IN THE SERVICE

DICK Men of Labor ARE FIGHTERS

Dear Jim—
How's the Top Sarge today? Judging from your rapid promotion, you're another MacArthur. We knew you had the stuff, boy. By the way, we're giving our production deadlines a heck of a trimming, so Uncle Sam can get the things he needs, and get 'em fast!
The Gang

Howdy, Gang!
Sure enjoyed your letter. Believe me, it makes a soldier feel plenty swell to learn that his buddies back in the shop are on the job the way you fellows are coming through for me and my sidekicks. We can't lose with such backing-up!
Thanks, Jim

DICK Men of Battle ARE FIGHTERS

QUALITY TRADE DICK MARK SERVICE

FIRST QUALITY PLUMBING BRASS GOODS SINCE 1897

DICK BROTHERS, INC.
READING, PA.

NOW AVAILABLE TO ALL PLUMBERS

CLOSET BOWL SETTING SEAL

The Perfect Compound FOR SETTING

CLOSET BOWLS . . . URINALS
STRAINERS and TAIL PIECES

OVER 30 years of use has proved that CLOSET BOWL SETTING SEAL assures a joint between fixture and flange that is PERMANENTLY leak-proof, gas-proof and odor-proof. It does not crack or harden and reshapes itself, maintaining its leak-proof qualities even if the fixture is moved by jarring or settling of the building. CLOSET BOWL SETTING SEAL is easy to use and convenient to carry . . . has the "tack" which putty lacks.

Important if you are doing work that is subject to Government inspection!

CLOSET BOWL SETTING SEAL conforms to Government specifications H H-C-536 and is a "must" on such jobs.

A Profit in Every Tube

Putty is an expense that adds to your costs. Charge for CLOSET BOWL SETTING SEAL by the tube and assure yourself an added profit on every installation. The convenient 8 ounce tube holds the correct amount for most jobs.

Triple Seal Tank Balls

Patented three-way sealing assures perfect seating on all valves, even though badly worn. We are still able to supply you but suggest that you order in advance for your normal requirements.

Write for your FREE SAMPLE of CLOSET BOWL SETTING SEAL

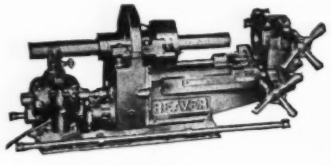
RADIATOR SPECIALTY COMPANY

CHARLOTTE NORTH CAROLINA

BRANCHES AND MFGS. OF LOS ANGELES, CALIF. — SOLDER SEAL PRODUCT — FACTORIES TORONTO, CANADA

Boiler Solder Seal • W J Boiler & Heating System Cleanser • Adjusto, the direct water heater and booster • Triple Seal Tank Balls • Golden State Washers • Drain Pep • TiteSeal, the indestructible gasket and joint-sealing compound.

The A-B-C of Pipe and Bolt Machines

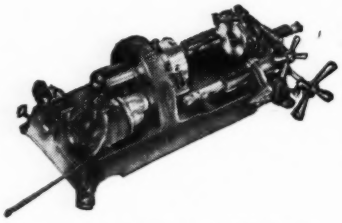


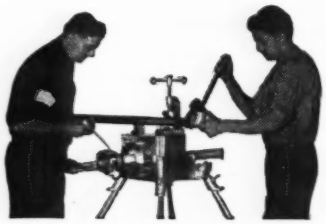
Beaver Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range ⅛ to 2-inch —up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Beaver Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch — up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Wt. 280 lbs. Ask for Bulletin-B.





Beaver Model-C

A sturdy little Power Unit

Converts Hand Pipe Tools into Power Tools from ⅛ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector — a safety feature. Two men can use it at the same time without interference. Easily portable — weighs about 150 lbs. Write for Bulletin-C.

BEAVER PIPE TOOLS

A Complete Line — Hand and Power!

443 DOME AVE. WARREN, OHIO

that the only way to know whether fuel is being saved by closing unused rooms is to make a test under both conditions. If the oil used during a certain period is measured accurately and divided by the degree days for the same period the oil used per degree day will be obtained. Any change in the heating system that amounts to anything will be noticeable in the change in this figure.

The writer has found instances where the consumption of oil was increased by closing one or more rooms. This is caused by increasing the load on the other radiators and thus the running time of the burner.

Ray H. McGlauflin.
Bangor Me.

Fahnestock Statement . . .

(Continued from Page 55)

cleanliness will be successfully used in the hospitals of the future.

The large capital expenditures necessary to provide equipment for the simultaneous control of one or more of these factors has seriously retarded research work in this most important field of endeavor which promises to yield results of far reaching benefit to mankind. Comprehensive research programs including equipment and personnel have been planned and started by the University of Illinois in its Chicago departments. The resources of the Colleges of Agriculture and Engineering at Urbana and the College of Medicine in Chicago have been combined to attack this important research problem involving the physiological effects of atmospheric environment on both normal and impaired humans.

Rapid progress will be made as soon as material and personnel are released from war activities.

Water Systems Talk . . .

(Continued from Page 41)

to keep his pump patients operating at full efficiency.

Very few people realize the importance of running water until the pump breaks down and it is necessary to have water for household use. Neither do they realize, nor can they estimate the loss in man hours, productivity or insanitary conditions caused by a pump breakdown. . .

A good draft animal requires 20 to 25 gallons of

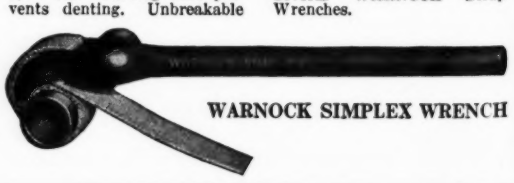
PROTECT the FINISH of FINISHED PIPE!

WARNOCK WRENCH

SMOOTH piping needs greatest protection against injury during threading and installation! This type of work calls for a WARNOCK Strap Wrench . . . the wrench that takes a sure but gentle grip on pipe. Flexible Woven Strap provides a soft contact yet has a tensile strength of 2,000 lbs. Curving nose prevents denting. Unbreakable handles are finished in enamel.

Obtain the WARNOCK Wrench if you have a volume of smooth piping work or the WARNOCK Simplex Wrench if you have infrequent use for a strap wrench.

Place an order today with your wholesaler for one or several WARNOCK Strap Wrenches.



WARNOCK SIMPLEX WRENCH

WARNOCK MFG. CO., Worcester, Mass.

NEW and IMPROVED

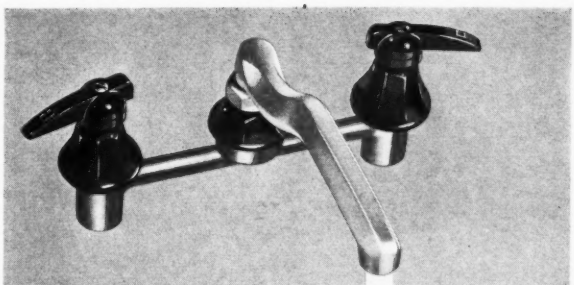
MODEL NO. 1000 *Universal*

FLUSH TANK LEVER

- SINGLE ACTION
- FITS ANY TANK
- QUICKLY INSTALLED
- LOW PRICE

In **appearance, in assembly, in design,** the new UNIVERSAL flush-tank lever is streamlined for modern tank installations. All metal construction, corrosive resistant. Handle finished in white high-baked synthetic enamel. Over a half million in use.

CRAMPTON MFG. CO., HOLLAND, MICH.



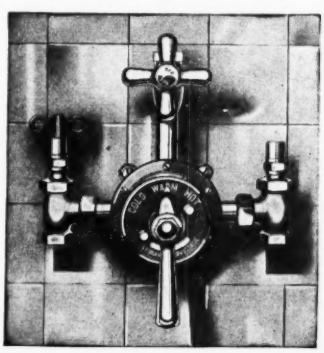
For the duration . . . it's iron and plastic fixtures, fashioned, however, with the same exterior beauty that made Salter Fixtures the choice of discriminating buyers. Equally easy to install and employing the same long life valve design associated with Salter quality.

Salter

H. B. Salter MFG. CO.
MARYSVILLE, OHIO

Masterpieces in Brass

SAFE—CONVENIENT THERMOSTATIC



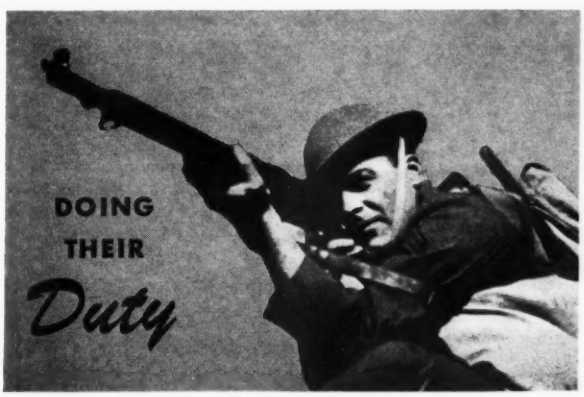
SHOWER BATH CONTROL

The temperature you want — when you want it! No more haphazard blending of hot and cold water. No more hot shots and cold spots when pressures vary. Rid yourself of these annoyances. Install a Series T Valve on your shower, set the pointer at the temperature you desire and really enjoy your shower.

Distributed through recognized plumbing wholesalers.

Manufactured by

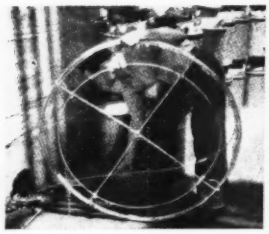
LEONARD VALVE COMPANY
1360 Elmwood Ave., Cranston, R. I.



K-CO Gas Stops — Top Relief Valves — Automatic Gas Shut-off Valves — Meter Connections . . . truly precision built products: made of finest grade materials: accurately machined and carefully tested, are required by the many production lines who are helping this boy also do his duty.

KITSON COMPANY
1500 Walnut St., Phila., Pa.

Subsidiary of the Welsbach Engineering and Management Corporation



Be Prepared to Handle Stoppages!

Do your part toward Victory!

Be prepared to handle emergency stoppages. Remove roots, grease, rags, mud, scale with FLEXIBLES, instead of digging up the line. Protect National health. Conserve critical materials. Save man power.

Write for catalog showing complete FLEXIBLE line.

Wire Brush

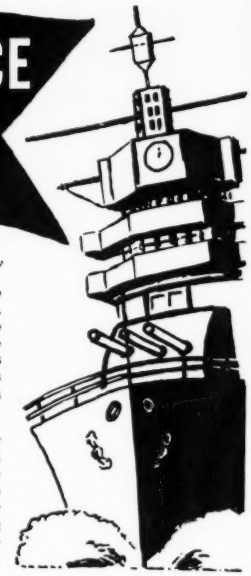
Double Corkscrew

Root Cutter

2" Corkscrew

FLEXIBLE
Sewer Rod Equipment Co.
9059 Venice Blvd.
Los Angeles, Calif.
Pickwick Bldg.
Kansas City
401 Broadway, New York

FIRST CHOICE of the NAVY



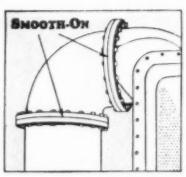
Speed . . . Accuracy . . . Tested Quality

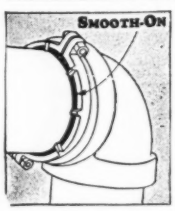
. . . . . are the first demands the Navy makes of its tools of war . . . the very qualities that have made GENUINE Barnes Cutters first in the field for more than 60 years. That's why GENUINE Barnes Pipe Cutters and Wheels are now first choice in the Navy Yards.

You can take a tip from the Navy in your post-war planning. If you are not one of the many fortunate owners of GENUINE Barnes Pipe Cutters, then place them first on your specification list. They will be a first-rate investment and will pay you dividends in the years to come.

The BARNES TOOL CO., Inc.
NEW HAVEN, CONN.

HOW TO RE-USE
Old Fittings and Gaskets





When you find it difficult to obtain new pipe fittings or gaskets, Smooth-On No. 1 will enable you to use old ones, even if the pipe threads of the fittings are imperfect or if the gaskets are somewhat mutilated.

Smooth-On No. 1 fills all voids of pipe threads or gaskets, and expands on hardening so as to permanently seal all leaks. This time-proved iron cement has many other uses, too, in repairing cracks, stopping leaks and tightening loose parts of apparatus and piping of heating and plumbing systems, fixtures, hardware, etc.

FREE **40-Page Repair Handbook**

170 Diagrams and simple, concise instructions for ingenious, practical repairs to plumbing and heating equipment, fixtures, etc. Every contractor should have a copy of this helpful manual.

Buy Smooth-On No. 1 in 7-oz., 1-lb. or 5-lb. containers from your dealer, or if necessary, from us. For your protection, insist on Smooth-On, used by repair men since 1895.

SMOOTH-ON MFG. CO., Dept. 12
570 Communipaw Ave. Jersey City, N. J.

Do it with **SMOOTH-ON**

MADE FOR LONG RUGGED SERVICE

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.

Tempered Steel

The Worcester line is complete.
Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

water a day. Tests show cows having drinking water available at all times produce more and richer milk than cows watered intermittently. Hogs with an abundant supply of water gain weight and are less susceptible to diseases. Well watered chickens lay more eggs. Irrigated crops have been known to double the yield of non-irrigated ones. . .

WATCH REPAIRS

Here is where your water system can help you overcome many obstacles if that water system is put into good operating condition. A good water system in good operating condition is capable of working 'round the clock, 24 hours a day, seven days a week! But to do that, a water system must not only be in good condition—it must be kept that way. Don't neglect your water system now of all times! You need its help more than ever before!

I am not a farmer, but I do know pumps, and I know there are many more gallons of life-giving water in your well or spring or lake. Your water system can deliver this water to all desired points (to the extent of its capacity) if you will have it thoroughly reconditioned. Use your barnyard faucets, water trough faucets, and your household faucets freely; irrigate your garden at night. Your pump can stand it and the cost of pumping water averages less than 5 cents per thousand gallons delivered. . .

Oil Heat Institute . . .

(Continued from Page 72)

chairman, respectively, at the annual meeting on March 8. The members also elected the following planning committee for the next twelve months: W. A. Kemp, chairman (Sundstrand Machine), P. K. Addams (Fitzgibbons), R. A. Bell (Rajah), Alexis Doster (Torrington), E. M. Ford (Webster), M. E. Henning (Penn Electric), J. K. Luthe (Perfex), E. N. McDonnell (McDonnell & Miller), A. Michelson (Minneapolis-Honeywell), T. W. Murphy (Monarch), J. W. Owens (Mercoid), V. K. Smith (Ohio Electric), and G. B. Tuthill (Tuthill Pump).

The planning committee will hold its next meeting in Chicago in June. M. E. Henning is the new secretary of the Accessory Division.

His Best Tools X-L Quality

• COUPLINGS
• PIPE CAPS

Specify "X-L" Couplings and Caps—the trade-mark you can ALWAYS depend on for Quality. "X-L" Couplings are made from solid bar and seamless tubing. Both "X-L" Couplings and "X-L" Caps are Thoroughly Tested, Accurately Made.

Sold by Recognized Distributors and Jobbers in the United States and Canada

WHEELING MACHINE PRODUCTS CO.
WHEELING, WEST VIRGINIA

TAL'S Prestal
HYDRAULIC PORTABLE

PIPE BENDER

for iron and steel pipe from 3/8" to 4 1/2"

● No Heating
● No Filling
● No Kinks
● No Wrinkles

The NEW TIME-SAVING, LABOR-SAVING MACHINE that ELIMINATES EXTRA WORK!

SMOOTHNESS OF BENDS:

No breaking of pipe due to scientific development of bending formers. No job too complicated.

Why use fittings, elbows, etc. in places where they are not necessary? Make your job easier—faster—less complicated and at the same time save critical materials.

Those who use TAL'S PRESTAL once, never again go back to old, time-wasting methods.

Use it for all types of plumbing and heating.

TAL'S PRESTAL is portable—goes along on every job—is so easy to operate that even "green hands" will turn out smooth, wrinkle-free bends in one single, simple operation requiring only a few minutes.

Obtainable in three different sizes.
Meets U. S. Navy, Army & Maritime Comm. Specifications.
Write today for circular giving complete description.

TAL'S PRESTAL BENDER, INC. Dept. D-4 Milwaukee, Wisconsin

HYDRAULIC PORTABLE TAL'S PRESTAL

PIPE CHIPS DO CAUSE DAMAGE!

Unreamed pipe has burrs. These obstruct free flow, cut pipe capacity, and collect pipe chips and foreign matter which, when dislodged, endanger every valve and regulator on the line. The blades on the MUELLER reamer are made of high grade tool steel, and can be easily sharpened if necessary. Pipe ends are reamed easily and quickly. Come in two sizes. Write for descriptive literature.

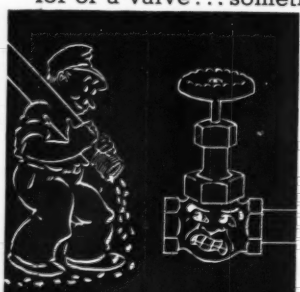
Dept. G

MUELLER CO. DECATUR, ILL.

MILVACO MIKE SEZ:

Clean the chips from the pipe after cutting threads or they will probably find their way into the valve after installation.

Chips can do plenty of damage to the interior of a valve... something similar to what ground glass might do to your stomach.



Anyway, it's always best to prevent such damage by cleaning the pipe of all chips before installing... and save the valve.

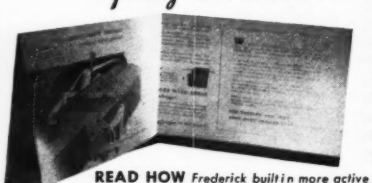
Send for the complete "MILVACO MIKE" Series of 8 cards.

MILWAUKEE VALVE CO.
MILWAUKEE WISCONSIN

REDESIGNED FREDERICK STOKERS CORRECT MANY COMMON STOKER FAULTS!

Stoker operators told us what they didn't like... Our engineers went to work to improve, and to eliminate objectionable features... And...

THESE LATEST DEVELOPMENTS IN INDUSTRIAL STOKERS ARE *fully described..* in a folder that tells, in detail, how and where we built in many new features for thrift and convenience! If your work is war essential, we'll be glad to send you this folder.



READ HOW *Frederick built in more active grate surface . . . proportioned air for more thorough combustion . . . simplified installation . . . and engineered many other improvements to correct common stoker deficiencies!*

CLIP THIS COUPON AND MAIL TO

Send a copy of your new Stoker Folder to

NAME .....

COMPANY .....

ADDRESS .....

The FREDERICK IRON & STEEL CO.
Box 111, Frederick, Maryland

Centrifugal Pumps for All Purposes.

Plastic Plumbing . . .

(Continued from Page 46)

soap dishes, towel bars, washers, and gaskets, the most spectacular work in this field is in the creation of advertising window display stands, plastic furniture, and exclusive containers for perfumes and toilet water.

And now we must leave our luxurious panel-lighted bath with its soft colors and rich tones, the fine appointments created from air, coal, oil, salt, water and waste products by the miracle of modern chemistry—leave them, yes but only until we settle some differences across the oceans.

Wilmington Job . . .

(Continued from Page 77)

is a barrel type structure with huge glued wood laminated arches supporting the roof.

Portions of the community center buildings are heated with warm air furnaces, installed by A. H. Berg & Son. For a part of the heating system in these structures it became necessary, due to a shortage of equipment, to install whatever type of furnace could be obtained. For that reason, the heating equipment which supplements the furnace units in these structures represents a miscellany of types, some of which were installed by A. H. Berg & Son and some by H. E. Peterson.

Water Systems . . .

(Continued from Page 53)

The action is designed to increase food production on such farms by making it possible to operate farm machinery with electricity, saving manpower and increasing production.

Previously a minimum of ten "animal units" was required to make a farm eligible for electric service. An "animal unit" is a measure of a farm's productive capacity. Under the amended order the minimum is cut to five animal units. An extension of up to 100 feet is permitted for each animal unit, if all other conditions of the order are satisfied.

Stop PIPE SWEATING...

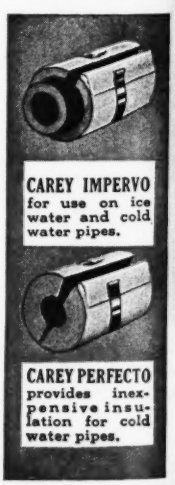
KEEP COLD WATER *Cold*

WITH *Carey* **COLD WATER INSULATION**

When you insulate cold water pipes, do the job RIGHT with CAREY Pipe Coverings made specifically for the purpose.

For ice water pipes, use CAREY IMPERVO to keep the water cold and to eliminate sweating. CAREY PERFECTO Pipe Covering is designed to provide inexpensive insulation, for cold water pipe and to prevent sweating and freezing to a reasonable degree.

Both products are available in thicknesses to meet temperature conditions. Write for full details and prices of these superior CAREY Pipe Coverings — address Dept. 18.



CAREY IMPERVO for use on ice water and cold water pipes.

CAREY PERFECTO provides inexpensive insulation for cold water pipes.

THE PHILIP CAREY MFG. COMPANY • Lockland, Cincinnati, Ohio
Dependable Products Since 1873
IN CANADA: THE PHILIP CAREY COMPANY, LTD., Office and Factory, LENNOXVILLE, P. Q.

Johnson gives you

more Hot Water from each gallon

of *Fuel Oil!*

AQULUX
Heavy Duty
WATER HEATERS

Look at these *Efficiency Rating* figures for the Aqulux-225 . . . a typical model of Johnson's heavy duty water heaters:

Stack temp. at full capacity.....400° F.
CO_2.....12% Stack loss.....14%
Efficiency Rating.....80%

Performance like that pays dividends in lower fuel consumption and shorter recovery time. And don't forget . . . this performance is achieved by Aqulux Heaters built to wartime specifications . . . without insulation, galvanizing or jackets, and with a minimum of copper and aluminum.

The Army, Navy and essential industries are getting practically all that are now available. But a day of Victory is coming . . . soon, we hope . . . when anyone may have them. When that day comes, you will find we are still carrying on the 40-year-old Johnson tradition of fine engineering and fine workmanship in the building of Oil Burning Equipment. S. T. Johnson Co., 940 Arlington Ave., Oakland, Calif. and 401 No. Broad St., Philadelphia, Pa.

S. T. JOHNSON CO.

40 years of engineering and building fine Oil Burning Equipment

A Perfect Team

FOR PROCESS CONTROL

Here are two Sarco products that work well together on heavy duty steam heated equipment requiring accurate temperature control. Sarco float-thermostatic steam traps remove condensate continuously without shock and as fast as it forms.

Sarco self-operated temperature regulators provide gentle, throttling control of the steam supply to maintain desired temperatures within close limits.

Use this team for hot water generators, blast or unit heaters, and all types of process equipment where constant temperatures are important and the steam loads are heavy. Catalogs 450 and 600.

TR-21 Regulator 149

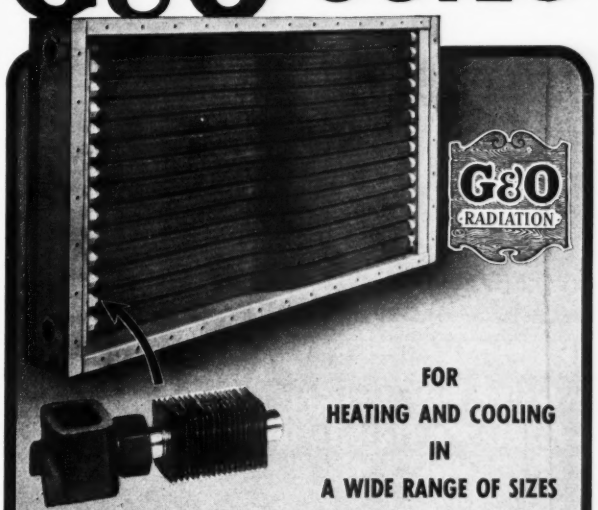
SARCO SAVES STEAM

SARCO COMPANY, INC.
475 Fifth Avenue, New York, N. Y.
Sarco Canada Ltd., Federal Bldg., Toronto, Ont.

Thermal Bellows Units
for
THERMOSTATIC STEAM TRAPS

CLIFFORD MANUFACTURING CO.
564 E. FIRST STREET, BOSTON
CHICAGO DETROIT
PRODUCERS OF BELLOWS EXCLUSIVELY
SERVING AUTOMATIC CONTROL MANUFACTURERS

G&O COILS



Detail of mechanical joint used in Universal Heat Transfer Coils.

FOR
HEATING AND COOLING
IN
A WIDE RANGE OF SIZES

•

Send for Catalog

•

THE G&O MANUFACTURING COMPANY
New Haven, Connecticut
Pioneer Manufacturers of Square Finned Tubing in the United States

IMMEDIATE DELIVERY

PYREX GAUGE GLASSES

30,000 DOZENS

A complete stock for immediate delivery of CORNING STANDARD, PYREX HIGH PRESSURE, PYREX RED LINE and PYREX BROAD RED LINE GAUGE GLASSES.

Machine facilities available for special lengths. Also Glass Cylinders, Oil Cup Glasses, Lubricator Glasses, etc. *Write, wire, or phone.*

"SWIFT" LUBRICATOR CO.
19 JAMES BLDG.
ELMIRA, N. Y.

"X" BOILER LIQUID

Seals Leaks in HIGH and LOW Pressure Boilers—Contains NO Solids

"X" FLUSH & "X" RUSTOFF
Stops Foaming, Surging and Priming

"X" PIPECUT OIL
A Fine Cutting Oil for Threading Dies

"X" PIPEJOIN
Seals Water, Steam or Gas Lines

"X" LABORATORIES, INC. 25 WEST 45th ST., NEW YORK

Utica HOT WATER GENERATOR

For installation in boilers and furnaces. Cast iron. 30-40-60 gallon capacity. Write for details.

PARMELEE PUSH NIPPLES

Malleable and Steel RADIATOR and BOILER. Prompt shipment from Complete Stock.

ANY STYLE—AGE or MAKE
Submit sample if possible.

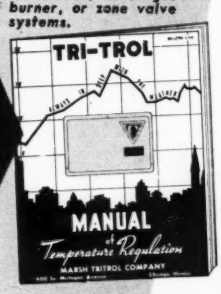
UTICA RADIATOR CORP. 2222 DWYER AVE. UTICA, NEW YORK

YOUR ANSWER TO FUEL RATIONING

• This new manual tells all about it—the "outside" heat control that apartments, office buildings, etc. need right now. NO PRIORITIES NEEDED—immediate delivery. Easily installed, priced right, pays big profit. Mailing pieces and sales folders are waiting for you. RIGHT NOW—before you forget—send a card for all the facts.

MARSH TRITROL COMPANY
600 S. Michigan Ave., Chicago, Illinois

For stoker, oil or gas burner, or zone valve systems.



MARSH *Tri-trol* REGULATOR
A money-maker you can sell *right now.*

For LOW COST INSURANCE

-against the danger of scalding water

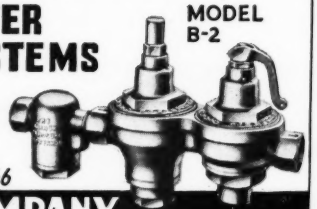
Use Powers thermostatic water mixing valves for Group Showers, Wash Sinks, Hot Water Line Control and Industrial Processes. Capacities up to 2,650 g. p. m. Write for Circular 3017. THE POWERS REGULATOR COMPANY, 2716 Greenview Avenue, CHICAGO. —Offices in 47 Cities.

1 POWERS CONTROLLER will SAFEGUARD as many as 25 showers against scalding water

POWERS
WATER TEMPERATURE CONTROL

PRESSURE CONTROL
by KAINER *for*
HOT WATER HEATING SYSTEMS

MODEL B-2



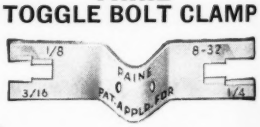
Sold Thru Wholesalers Everywhere - Ask Your Nearest

Write for Bulletin No 66

KAINER & COMPANY
761 LEXINTON STREET . . . CHICAGO

SAVE YOUR TIME & FINGERS with PAINE

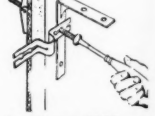
PAINE TOGGLE BOLT CLAMP



FREE WITH EVERY BOX OF PAINE TOGGLE BOLTS

PAINE SPRING WING TOGGLE BOLT Fig. 123

Makes every toggle bolt installation faster and easier. Clamp holds bolt tight against device to be anchored so bolt can be tightened with screw driver. Also saves mechanics fingers.



Ask your Supplier for PAINE Toggle Bolts and get the clamp FREE.

THE PAINE CO., 2955 CARROLL AVE. CHICAGO, ILLINOIS

HOTEL CONTINENTAL

Featuring 5 star attractions for enjoyment of living at its best (1) Penguin Room (2) Sky-Hy Room (3) Omar Cocktail Lounge (4) The Alcove (5) The New Coffee Shop. Outstandingly gay and attractive ....Guests enjoy all club facilities, including swimming pool...perfect location at 11th and Baltimore

22 FLOORS OF MODERN COMFORT

$2.50 FROM WITH BATH

R. E. McEACHIN, Managing Director

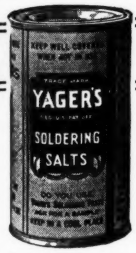
KANSAS CITY

VICTORY FIRST...—

then Hindley's Plumbing Aids Again!

Our manufacturing facilities are now largely devoted to urgent war work! HINDLEY'S Plumbing Aids are in pressing use on many Government jobs . . . saving time and labor . . . helping to do work better and more efficiently! When the fight is won, and there is no longer a shortage of critical materials, HINDLEY'S Plumbers Specialties will again be available to you in pre-war quantities. Just keep the name HINDLEY'S in mind when you start restocking your post-war kit!

HINDLEY MFG. CO. VALLEY FALLS, R. I.



Makes Both Ends Meet...FAST!

Any soldering job can be done quicker . . . easier and better with YAGER'S Soldering Salts! It is free-flowing . . . goes right to the point of contact . . . makes stronger, neater connections . . . speeds up work and saves materials! No fumes, no acids, no corrosion! YAGER'S Soldering Salts now have become a war-time necessity with plumbing contractors because it saves time, money and labor! Order your supply from your wholesaler.

In ½, 1, 5, 25 and 50 lb. cans.

List of distributors in McRaes Blue Book. Sales agency for Canada: Canadian General Electric Co., Toronto, Montreal.

ALEX R. BENSON CO., Inc., Hudson, N. Y.

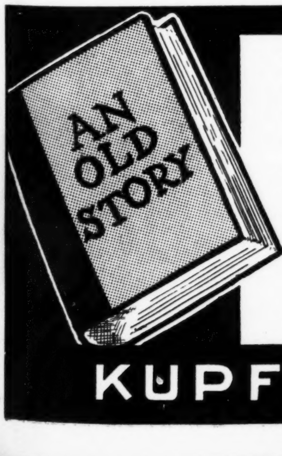
•PRODUCTION PLANTS • DEFENSE HOUSING • CANTONMENTS • WAR PRODUCTION PLANTS • DEFENSE HOUSING

Urgent War-Time Needs SUPERSEDE *Civilian Demands*

Sherwood Ball Cocks will be back on the line as soon as critical materials are available or suitable substitutes.

SHERWOOD BRASS WORKS
6331 E. JEFFERSON AVENUE DETROIT, MICH.

PRODUCTION PLANTS • DEFENSE HOUSING • CANTONMENTS • WAR PRODUCTION

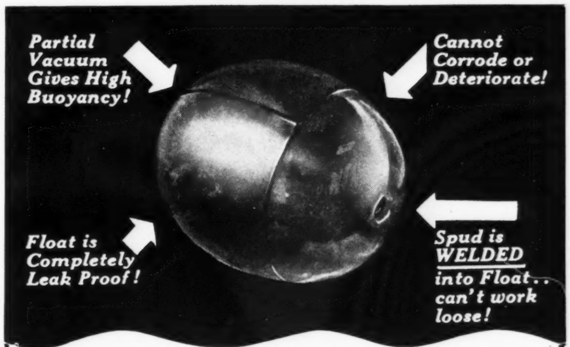


War is not a new story to Kupferle. This is the fourth war in our business existence. After the duration, Kupferle products will again return to civilian use . . . unchanged in high quality and unchanged in ethical business policy.

FIRE HYDRANTS
YARD HYDRANTS
WALL HYDRANTS
STREET WASHERS
HARDWARE SPECIALTIES
PLUMBING SPECIALTIES
SPECIFICATION DRAINS

JOHN C. KUPFERLE FOUNDRY CO.
ST. LOUIS

KUPFERLE



These Are The Points...

That Make "FALK AMERICAN MADE" THE PERFECTED Glass Tank Float!

There's not a bit of guesswork in FALK Glass Floats! They have been thoroughly tested and put to actual use by leading American Potteries! FALK Glass Floats last indefinitely. They can't water-log. They are 100% practical and dependable! There's no priority restrictions to limit your sales! FALK American Made Glass Floats make it possible for you to get this kind of business . . . NOW! Ask your wholesaler . . . or if he cannot yet supply you . . . write us direct!

FALK GLASS PRODUCTS CO.
24 EAST 21st STREET NEW YORK, N. Y.

VACUUM PACKED... FACTORY FRESH!

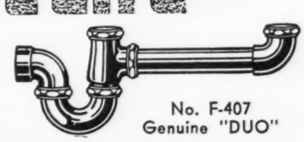
"DANDY" Tank Balls come out of their air-tight containers fresh as the day they're made! This . . . plus the fact that DANDYS are made of tough, alkali-resisting black rubber compound . . . makes them last longer and give superior service! DANDYS cannot swell . . . they seat perfectly in all types of valves. Install DANDYS on all your tank jobs for lasting satisfaction. Order them from your wholesaler . . . *now!*

LAVELLE RUBBER CO.
424 NORTH WOOD ST.
Chicago, Illinois

FERROUS METAL PRODUCTS
BY THE M. S. LITTLE MFG. CO.

Featuring **PEBELAC** *The New Finish*

Included are the Genuine "DUO" Wastes (Reg. U. S. Pat. Off.) with the "DUO" Sanitary construction features. Look for the name "DUO".



No. F-407
Genuine "DUO"

CATALOGED BY LEADING WHOLESALERS

MADE BY M.S. Little

TUBULAR BRASS PLUMBING GOODS — HEATING SPECIALTIES
THE M. S. LITTLE MFG. CO. HARTFORD, CONN. U. S. A.

TYPE A

DONNELLY
AUTO-CLOSE
SELF-CLOSING
RELIEF VALVES

For Excessive
TEMPERATURE PRESSURE
OR VACUUM!

Sell SAFETY to YOUR CUSTOMERS

DONNELLY PRODUCTS CO., INC.
Established 1909 MALDEN, MASS.

The CADWELL Line . . .

★ FLOOR & CEILING PLATES
Army-Navy-Maritime and War Shipping Board
★ RELIEF VALVES
★ AIR VALVES
Priorities Necessary

Recommended by Master Plumbers everywhere . . . for dependable performance.

The BEATON & CADWELL Mfg. Co.
Established 1894
NEW BRITAIN, CONN.

STRONG
Where STRENGTH Counts MOST

Pipe jobs that assure the most lasting connections are those on which ATHOL Brass Ferrules, Unions, and Union Ferrules are installed. With ATHOL there's no breakage . . . no lost motion . . . no lost time! Specify ATHOL . . . place a trial order with your plumbing supply house today.

DEPENDABLE ATHOL

ATHOL
BRASS FERRULES, UNIONS AND UNION FERRULES
THE LEAVITT MACHINE CO., ORANGE, MASS.

Look for the Arm-and-Hammer
ARMSTRONG BROS.

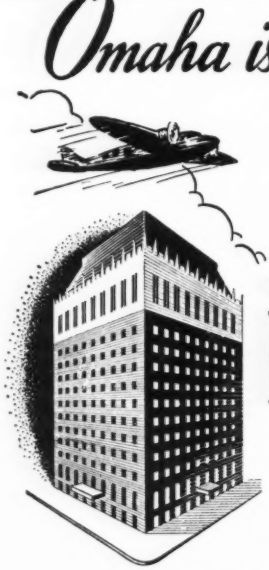
STOCKS AND DIE SETS

Solid, Adjustable and Receding Types. Dies, Vanadium Tool Steel, with "backed-off" Teeth—cut easier, smoother. Comes off pipe without tearing or jamming. Stay sharp. Design superiority: Correct Cutting and Throat Angles. Ample chip clearance. Stocks are accurately machined, cadmium plated. Ring or adjustable guides.

"The Tool Holder People"
ARMSTRONG BROS. TOOL CO.
323 N. Francisco Ave., Chicago, U.S.A.
Eastern Warehouse & Sales:
199 Lafayette St., New York, N. Y.

Omaha is Proud . . .

of this outstanding hotel, noted as the civic, social and travel center of the city. There's far more to enjoy but it is far from being expensive.



HOTEL
FONTENELLE

Official A.A.A. hotel. Home of the National Aeronautic Assn. Headquarters of civic clubs including: Rotary, Kiwanis, Blue Goose, Lions, Optimists, Ad-Sell, Omaha Executives.

CAN'T GET 'EM UP
in the morning!

It's those luxuriously comfortable beds at all
DEWITT OPERATED HOTELS

In Cleveland — HOTEL HOLLENDEN
In Columbus — NEIL HOUSE
In Lancaster, O. — THE LANCASTER
In Corning, N. Y. — THE BARON STEUBEN

Check IN
THEO. DEWITT — PRESIDENT

DeWITT OPERATED HOTELS

Classified ADVERTISING

SITUATIONS OPEN

Specialty salesmen experienced in merchandising highest grade Rubber Plumbing Specialties and Brass Plumbing accessory items to Master Plumbers. Must be draft exempt. Give complete data on past and present experience and connections, record of sales past five years, married or single, age and territory location desired. Financially strong, high class company offers liberal commission basis with draw commensurate with sales. Several territories East of Mississipi open. Address Box 347-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

HEATING ESTIMATOR AND ENGINEER

J. S. Cassedy, Inc., Cambridge, Mass., has opening for Heating Estimator and Engineer. Must have technical education and sufficient contracting experience to take charge of Heating Dept. doing over one half million dollar business yearly. J. S. Cassedy, Inc., Cambridge, Mass.

WANTED: LOCAL MANUFACTURER, in plumbing line, interested in salesman for either Philadelphia, or New York, or both, to call on the jobbing trade exclusively. Preferably a man about 30. Sell one line only. Salary and expenses. Address Key 348-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

WANTED — PUMP ENGINEER AND designer by factory manufacturing all types of Domestic Pumps. Address Dept. 1W, A. Y. McDONALD MFG. CO., P. O. Box 508, Dubuque, Iowa.

MANUFACTURERS' REPRESENTAtive known to the best trade desired for quality plumbing and industrial specialties now being sold to quality trade, repeat items, excellent commission. Exclusive territories open. Write full details. Box 613, Equity, 113 West 42nd Street, New York, N. Y.

BUSINESS OPPORTUNITIES

MEET POST WAR COMPETITION with profits: Manufacturer of Soil, Drainage Fittings, and Plumbers' Tools. Prepare Now. For particulars, address Key 343-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

$3800 CASH TAKES PLUMBING HEATing Business and Gas Utility Agency, 75 miles Northwest of Chicago. $42,000 volume. $100 per month guaranteed income on gas agency. Low rent. Real opportunity. Address Key 352-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

LINES WANTED

Manufacturers' Representative desires additional lines for sale to jobbers in Southern California area. Particularly interested in plastic or other substitute items of trimming. Address W. F. GEDDES, 660 South Vermont Ave., Los Angeles, Calif.

MANUFACTURERS' REPRESENTAtive, draft exempt, thoroughly experienced, financially responsible; selling plumbing, heating, marine supply jobbers on high priorities; New York, New Jersey territory; seeking one additional line, straight commission basis. Correspondence kept strictly confidential. Address Key 351-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

ATTENTION SMALL MANUFACturers: Well known manufacturers' representative with highest references can market your product to plumbing supply wholesalers. Territory upstate New York, western Pennsylvania and eastern Ohio. Address Key 349-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

FOR SALE

FOR SALE: 7 STEEL OIL TANKS 6,000 gal., 12,000 gal., 20,000 gal. capacity. R. C. STANHOPE, INC., 60 E. 42nd ST., NEW YORK, N. Y.

JOBBERS ATTENTION: FOR YOUR requirements of plumbing and heating specialties. Send us your inquiries. PLUMBING PRODUCTS COMPANY, CHARLESTOWN, MASS.

FOR SALE

RADIATION — 22 CENTS SQUARE foot. 2080 feet 8A Peerless wall radiation, divided in 65 fig. 821 four section assemblies. Painted, splendid condition. Address Key 354-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

WANTED TO BUY

WILL PAY FAIR PRICE FOR COMPLETE STOCK OF PLUMBING, HEATING, STOKERS, ETC.
Wire at our expense.
OGDEN SUPPLY & DISTRIBUTING COMPANY
3934 W. Cermak Road, Chicago, Ill.

WANTED TO BUY—STEEL OR CAST iron bath tubs. Needed for big Detroit housing project. Wire collect where these can be obtained. STATE PLUMBING & HEATING SUPPLIES, Inc., 12201 Twelfth Street, Detroit, Mich.

WANTED TO BUY: WILL PAY CASH for steel storage tanks from 5,000 gal. to 100,000 gal. capacity. THE DARIEN CORPORATION, 49 E. 41st ST., NEW YORK, N. Y.

WILL BUY ANY QUANTITY AND PAY highest prices for surplus pipe couplings. Write Russell F. Kleinman, 5313 No. Second Street, Philadelphia, Pa.

WANTED TO BUY FOR CASH, BRASS trimmings for Bath, Basin & Sinks. Send us your list of surplus items. Taylor Brothers, Oklahoma City, Oklahoma.

WANTED—WILL PAY SPOT CASH for double shell recess bath tubs, left or right drilling. Standard "Pembroke," Kohler or Equal. Address Key 350-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

WANTED: PLUMBING SUPPLIES. Mail your surplus lists on the entire line to A. E. Lyon Co., Box 270, Glendale, California. Branches: Portland and Seattle.

WANTED FOR CASH — IRON OR steel "A" grade bath tubs, also other plumbing material. Send us a list of what you have. Address Key 353-D, "DOMESTIC ENGINEERING," 1900 Prairie Avenue, Chicago, Illinois.

Modernized.. Beautified..

Buffalo's Most Congenial Hotel

Today, you'll enjoy your stay at Hotel Lafayette more than ever! Extensively remodeled, and redecorated, this fine hotel offers new convenience and comfort—but the friendly hospitality is the same as ever. Excellent food, homelike rooms, reasonable prices. And remember: Hotel Lafayette is Buffalo's most centrally located hotel. Moderate rates: Single, $2.75 up; Double, $4.50 up; special rates for 4 or more. Write for Folder C.

HOTEL LAFAYETTE, BUFFALO, N. Y. • • K. A. KELLY Manager

Have you designs on New York?

The best daily starting point for your New York project is the Hotel Woodstock. Situated in Times Square in the very center of your circle of activities—within easy walking distance of leading theatres, night clubs, shops and—yes—3 short blocks from The Engineers Club. 2 excellent, moderate-priced restaurants.

Rooms with bath from $2.50 *single,* $3.50 *double*
Suites from $7.00

HOTEL Woodstock
127 WEST 43rd STREET
Thos. J. Kelly—Manager

Index to ADVERTISERS

Alberene Stone Corp. of Virginia...103
American Brass Co., The..... 26
American District Steam Co.....101
American Molded Products Co.....102
American Rolling Mill Company, The 97
Anaconda Copper Mining Company.. 26
Anchor Stove & Range Co., Division of Stratton & Terstegge Co., Inc..101
Armstrong Bros. Tool Co.....112

Baker Manufacturing Company..... 99
Barber Gas Burner Co., The.....114
Barnes Tool Co., Inc., The.....106
Bathe-Rite Division, Milwaukee Stamping Company 30
Beaton & Cadwell Mfg. Co., The...112
Beaver Pipe Tools, Inc.....104
Bell & Gossett Co..... 22
Benson Co., Inc., Alex R.....111

Carey Mfg. Company, The Philip...108
Catskill Metal Works 27
Chicago Faucet Co., The..... 94
Clayton & Lambert Mfg. Co.....114
Clifford Manufacturing Co.....109
Conkey and Company, H. D., Field Control Division 101
Coyne & Delany Co..... 34
Crampton Mfg. Co.....105
Crane Co. 15

Delco Appliance Division, General Motors Corporation 116
Deming Co., The.....115
Dick Brothers, Inc.....103
Dole Valve Company, The.....100
Donnelly Products Co., Inc.....112
Dunham Company, C. A..... 99

Ebco Manufacturing Co., The..... 88
Eclipse Plastic Industries..... 95
Economy Pumps, Inc..... 95
Eljer Co. 40
Elmer E. Mills Corporation..... 81

Falk Glass Products Co.....111
Fibre Conduit Co., The..... 17
Field Control Division, H. D. Conkey and Company 101
Filtrine Manufacturing Co.....102
Fitzgibbons Boiler Company, Inc.... 64
Flexible Sewer-Rod Equipment Co..106
Flint & Walling Mfg. Co., Inc..... 36
Frederick Iron & Steel Co., The....108
Freeman Stoker Division, Illinois Iron & Bolt Co..... 75
Fretz-Moon Tube Co., Inc..... 8

G & O Manufacturing Company, The.109
General Ceramics Company..... 28
General Electric Company..... 25
General Motors Corporation, Delco Appliance Division 116

Good Manufacturing Co., Inc..... 32
Grinnell Company, Inc.....
.....Inside Back Cover
Guardian Utilities Co.....100

Hindley Mfg. Co.....111
Hoffman Specialty Co.....
.....Inside Front Cover
Holcomb and Hoke Mfg. Co..... 93
Hotel Continental 110
Hotels, De Witt 112
Hotel Fontenelle 112
Hotel Lafayette 113
Hotel Woodstock 113

Illinois Engineering Company.....101
Illinois Iron & Bolt Co., Freeman Stoker Division 75
Imperial Brass Mfg. Co., The.....102

Johnson Co., S. T.....109

Kainer & Company.....110
Kitson Company 105
Kohler Co. 37
Koven & Bro., Inc., L. O..... 94
Kupferle Foundry Co., John C.....111

Lavelle Rubber Co.....111
Lawson Company, The F. H..... 98
Leavitt Machine Co., The.....112
Leonard Valve Company.....105
Little Mfg. Co., The M. S.....111

Mansfield Sanitary Pottery, Inc..... 77
Marsh Corporation, Jas. P..... 67
Marsh Tritrol Company.....110
McDonnell & Miller..... 39
Mercoid Corporation, The..... 24
Milwaukee Stamping Company, Bathe-Rite Division 30
Milwaukee Valve Co.....108
Minneapolis-Honeywell Regulator Company 66
Mortell Co., J. W..... 92
Mueller Co. 107
Mueller Brass Co. 29
Mullins Manufacturing Corporation, Youngstown Pressed Steel Division 16
Myers & Bro., The F. E..... 9

National Radiator Company, The... 90
National Tube Company..... 12
New York Air Valve Corp..... 92
Nigg Engineering Co..... 18
Northern Indiana Brass Co..... 61

O'Brien Mfg. Co..... 90
Oster Mfg. Co., The..... 31

Paine Co., The 110
Perfex Corporation 23
Penn Electric Switch Co..... 73
Pittsburgh Tube Co., The..... 82
Powers Regulator Company, The...110

Preferred Utilities Mfg. Corp..... 96
Propellair, Inc. 11

Radiator Specialty Co.....104
Reznor Manufacturing Co..... 97
Ridge Tool Co., The..... 21
Rockford Brass Works.....102
Rochester Mfg. Co., Inc.....100

Salter Mfg. Co., H. B.....105
Sarco Company, Inc.....109
Scaife Company 78
Schaible Foundry & Brass Works.. 82
Schwab Safe Company..... 85
Scovill Manufacturing Company, Waterville Division 14
Sherman Mfg. Co., H. B..... 98
Sherwood Brass Works.....111
Sloan Valve Company..... 76
Smooth-On Mfg. Co.....106
Spang Chalfant, Inc..... 19
Speakman Company 115
Stratton & Terstegge Co., Inc., Division Anchor Stove & Range Co...101
Streamline Pipe & Fittings Division, Mueller Brass Co..... 29
Sturtevant Company, B. F..... 6
Swedish Crucible Steel Company, Seat Division 20
"Swift" Lubricator Co.....110

Tal's Prestal Bender, Inc.....107
Thrush & Co., H. A..... 93
Timken-Detroit Axle Co., Timken Silent Automatic Division..... 7
Toledo Pipe Threading Machine Co., The 42
Tompkins Company, A. G..... 33
Tuthill Pump Company..... 96

Uniflow Mfg. Co..... 88
United States Steel Corp..... 12
Universal Sanitary Mfg. Co..... 35
Utica Radiator Corp.....110

Vogel Co., Jos. A..... 3

Walworth Company 10
Warnock Mfg. Co.....104
Warren Webster & Co..... 91
Waterville Division, Scovill Manufacturing Company 14
Watts Regulator Co.....Back Cover
Weis Mfg. Co., Inc., Henry..... 5
Wheeling Machine Products Co.....107
Williams & Co., J. H..... 13
Williams Oil-O-Matic Heating Corporation 71
Worcester Brush and Scraper Co...106
"X" Laboratories, Inc.....110

Youngstown Pressed Steel Division, Mullins Manufacturing Corp..... 16
Youngstown Sheet & Tube Co., The. 67

BARBER
Gas Pressure
REGULATORS

Sizes 1/4" up
Certified by
A. G. A. Testing
Laboratory
Write for Prices

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, O.

C&L

★ PARTS FACTS about ★
★ Blow Torches and Fire Pots! ★

Check your tools now to see if they require repair. Repairs now might keep a blow torch or fire pot in service longer and aid in the conserving of critical materials going into NEW tools. Essential parts are still available. To speed up the delivery of parts: list REPAIR PARTS and COMPLETE TOOLS on SEPARATE orders for separate shipment.

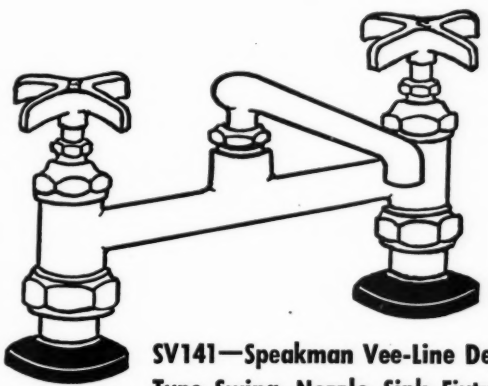
CLAYTON & LAMBERT
MANUFACTURING COMPANY • DETROIT, MICHIGAN

100% ENGAGED IN WAR PRODUCTION

DEPENDABLE

Speakman Fixtures

FILLING WARTIME DEMANDS



SV141—Speakman Vee-Line Deck Type Swing-Nozzle Sink Fixture

½" Female Couplings. Black plastic handles and deck escutcheons. Ferrous valves galvanized with renewable brass units and seats. (For P-10C Sink Spec. PE623.)

SV151 Speakman Vee-Line Utility Swing-Nozzle Sink Fixture. Wall type. ½" Female couplings. Black plastic handles and wall escutcheons. Ferrous valves galvanized with renewable brass units and seats. (For P-8A, P-8B, P-9, P-9A, P-9B, P-10, P-12 Sinks Spec. PE-623.)

SV161 Speakman Vee-Line Service Sink Fixture. ½" Female couplings. Rigid nozzle with hose thread. Black plastic handles and wall escutcheons. Ferrous valves galvanized with renewable brass units and seats. (For P-5 Sink Spec. PE-623.)

In the conservation of critical materials, Speakman is offering a dependable line of such fixtures. Efficient operation is assured by removable brass units and seats permitted by Limitation Order L42, Schedules V and Va. For full information write . . .

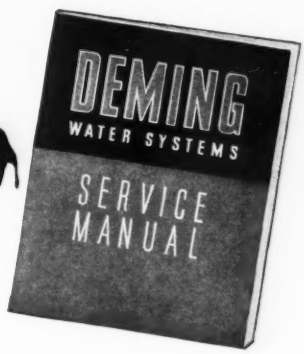
SPEAKMAN COMPANY · WILMINGTON, DELAWARE

SPEAKMAN

SHOWERS • SHOWER HEADS • BATH FIXTURES • SI-FLO (*SILENT*) FLUSH VALVES
LAVATORY FIXTURES • SINK FIXTURES • INSTITUTIONAL AND INDUSTRIAL FIXTURES

SHOWERS AND FIXTURES

Let's *talk* SENSE *on* PUMP SERVICE!



by
H. E. CARLOSS
Sales Manager
THE DEMING COMPANY, SALEM, OHIO

We, here at Deming, have too much respect for your good judgement to tell you WHEN and HOW to meet your customers' needs for pump service and repairs.

When we organized the DEMING PUMP PROTECTION PLAN, we did so in the belief that you would recognize its flexibility of use. We knew you would distinguish between "minor repairs and simple adjustments" which your customers can handle themselves and the kind of service on which your customers need help.

Where service calls are necessary, we know you have the courage and good judgement to SELL your services on a sound business basis.

• • • • •

Note: The Deming Pump Protection Plan (referred to in the above message) has proved successful for many Deming Distributors and Dealers. If you are not familiar with this plan, write us and we will send complete details.

☆ ☆ ☆ **DEMING** ☆ ☆ ☆

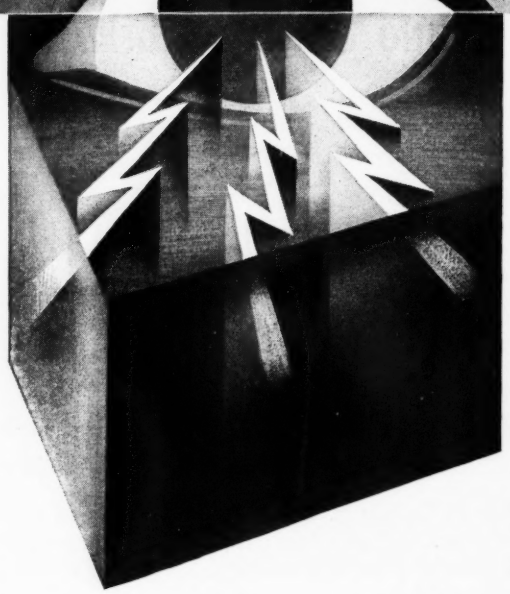
DEMING PUMPS THE WORLD'S BEST

PUMPS AND WATER SYSTEMS

BETTER SERVICE - LONGER LIFE

There's a GREAT DAY COMING!

"CRYSTAL GAZING"
with a 1,000,000-volt eye through 8 inches of steel



At last, engineers have solved the mystery of what goes on *inside* metals! With power to penetrate 8″ of steel, 1,000,000 volt X-Ray machines "expose" any hidden defects . . . permit the *crystals* of the metal to be examined as a physician examines the cells of the human body.

This scientific "crystal gazing" is a vital aid to Delco Appliance's all-out war production. By revealing flaws and providing a guide to repairs, it speeds inspection, insures quality, cuts rejects. It also enables engineers to work out improved casting techniques, and new combinations of elements that result in new metals of far greater strength, lightness and durability.

And this is just the beginning! Even now a *hundred million* volt X-Ray machine is being built. Imagine how such giants can help Delco Appliance still further increase the efficiency and long life of the new home equipment planned for post-war selling! In the meantime, *"Victory Is Our Business".*

Delco Appliances include Automatic Delco-Heat (oil-coal-gas), Delco Water Systems, Delco-Light Power Plants and Delco-Light Ironclad Batteries.

DELCO APPLIANCE

ROCHESTER, N. Y.

DIVISION of GENERAL MOTORS

Victory is Our Business

DURING WAR OR PEACE DELCO APPLIANCES "DO THE JOB BETTER"